

ENGINEER BATTLEFIELD FUNCTIONS
AT CHANCELLORSVILLE

A thesis presented to the Faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by

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B.S., UNITED STATES MILITARY ACADEMY, WEST POINT, NEW YORK, 1981

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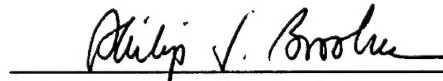
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ABSTRACT

ENGINEER BATTLEFIELD FUNCTIONS AT CHANCELLORSVILLE by MAJ James R. Weber,
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This study investigates the significant effect of mobility, countermobility, survivability, and topographic engineering on the American Civil War Campaign of Chancellorsville. The operations occurred near Fredericksburg, Virginia, in April and May of 1863. In the battle, the Confederate Army of Northern Virginia decisively defeated the Union Army of the Potomac. Engineer-related considerations contributed immensely to the Confederate victory.

Engineer battlefield functions influenced the operations of both armies. The Union Engineer Brigade constructed numerous pontoon bridges to overcome the river obstacles prior to and following the battle. This capability allowed the Union Army to initially surprise and envelop the Confederate Army. The natural obstacles of the rivers and forests and manmade obstacles of abatis hindered maneuver. Survivability was a significant factor during the fighting. At Chancellorsville, the Confederates used entrenchments for the first time in open operations. This strengthened their economy of force in front of the Union Army and gave "Stonewall" Jackson mass during his successful enveloping attack. Finally, topographic engineering was important through map production and reconnaissance by engineers.

This study concludes that the Confederate Army integrated the engineer battlefield functions more effectively than the Union Army. In part, this explains the decisive Confederate victory.

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CHAPTER ONE

INTRODUCTION

Engineer battlefield functions significantly affected the American Civil War campaign of Chancellorsville. Mobility, countermobility, survivability, and topographic engineering influenced the strategy and tactics of both sides. The more effective application of these by the Confederate Army of Northern Virginia contributed to its success over the Union Army of the Potomac.

Armies throughout history, and the United States Army today, frequently underestimate the importance of engineer-related activities to synchronization on the battlefield. This thesis seeks to answer the question: How important were the engineer battlefield functions of mobility, countermobility, survivability, and topographic engineering to operations during the Chancellorsville Campaign?

The Battle of Chancellorsville occurred from May 1 through 4, 1863.¹ It was a decisive victory for the Confederate Army of Northern Virginia under General Robert E. Lee. Following the battle, the Union Army of the Potomac, commanded by Major General Joseph Hooker, retreated back to the north side of the Rappahannock River and conceded the initiative to the Confederates. Only six weeks later the Southerners began the advance north into Maryland and Pennsylvania that ultimately resulted in the Battle of Gettysburg.

At the start of the Chancellorsville Campaign, the Union and Confederate forces occupied opposite sides of the Rappahannock River near Fredericksburg, Virginia.² Hooker had more than twice as many men as Lee. There were about 134,000 men in the Army of the Potomac, while the Army of Northern Virginia mustered only about 60,000.³ The armies held these lines since the conclusion of the Battle of Fredericksburg, also a Confederate victory, which occurred the previous December.

At the time of the Battle of Fredericksburg, Major General Ambrose E. Burnside commanded the Union Army.⁴ He wanted to drive toward Richmond, Virginia. The high command of the Union Army believed early in the war that the capture of the Confederate capital would be decisive in ending the conflict. Because Richmond was the seat of government, the Union generals believed it was the center of gravity for the Confederacy. The route through Fredericksburg was the shortest way to this Confederate city. Burnside did not originally intend to conduct an opposed river crossing followed by a frontal attack against a prepared defense.

The majority of the Confederate Army had been located further to the west of Fredericksburg when Burnside conceived the plan. However, the Union Army did not cross the Rappahannock River fast enough. The late arrival of the pontoon train contributed to the delay. The extra time allowed the Confederates to react.⁵ General Robert E. Lee, the commander of the Army of Northern Virginia, shifted forces into and around Fredericksburg. Lee's soldiers defended from prepared positions at the base of and along the crest of the high ground called Marye's Heights located west of the town. During the Union Army's crossing of the Rappahannock River by pontoon bridges, Confederates fired at the engineers

and infantrymen from buildings in the town. Once on the far shore, the Union infantry conducted repeated frontal assaults against the Confederate defensive works. These futile attacks failed to dislodge the defenders. After suffering serious casualties, the Federals retreated back across the pontoon bridges.

The Battle of Fredericksburg impacted the Battle of Chancellorsville in a number of ways that are relevant to this study. The assault across the Rappahannock during Fredericksburg was one of the few opposed river crossings in the Civil War.⁶ During the Chancellorsville Campaign this happened again in and around Fredericksburg. However, the Confederate defenses were much weaker in May, and the Union assaults on those same positions met greater success. Also, the delay in crossing the river in December caused the Union Army to attack the main body rather than part of the Confederate Army. Engineers were blamed for this because the pontoon train did not arrive in time. However, it was not entirely their fault. Incomplete staff planning at Army Headquarters and poor trafficability of the roads also contributed.⁷ The Union Army also experienced river crossing delays in the spring of 1863. This time, it would be measured in hours, not days. However, the problems in synchronizing a river crossing operation were still apparent. These engineer-related topics influenced the Fredericksburg Campaign and would continue to do so at Chancellorsville.

Fredericksburg also impacted the mindset of Major General Joseph Hooker. In January of 1863, President Abraham Lincoln replaced Burnside as commander of the Army of the Potomac.⁸ Hooker assumed command and began to develop a new campaign plan. As a grand division commander in charge of

two corps at Fredericksburg, Hooker saw firsthand the carnage inflicted by entrenched infantrymen armed with rifles. As commander of the Union Army in the Chancellorsville Campaign, this memory would cloud his thinking.

Hooker reorganized the Army of the Potomac after assuming command, doing away with Burnside's three grand divisions. For the upcoming campaign, seven infantry corps comprised the army. The First Corps was commanded by Major General John F. Reynolds. Major General Darius N. Couch had the Second Corps. The Third Corps belonged to Major General Daniel E. Sickles. The future Commander of the Army of the Potomac at Gettysburg, Major General George G. Meade, was in charge of the Fifth Corps. The Sixth Corps was under Major General John Sedgwick. Major General Oliver O. Howard's Eleventh Corps and Major General Henry W. Slocum's Twelfth Corps completed the organization. Hooker also consolidated the cavalry into a single corps under Major General George Stoneman. The mounted arm was about 12,000 men strong. The total effective strength for the Army of the Potomac was over 134,000. The army possessed approximately four hundred artillery pieces. Hooker had a formidable sized force that was a more efficient organization than Burnside's in December.

With this organization, Hooker developed a three-part offensive operation. The first was a raid by Stoneman's cavalry.⁹ He would take 10,000 men of the Cavalry Corps across the Rappahannock at Kelly's Ford, about twenty miles upriver from Fredericksburg. This force would then cut rail lines, destroy supply depots, and attack Confederate forces if they retreated from Fredericksburg. The second part was a supporting attack near Fredericksburg under Major General John Sedgwick. Sedgwick had his own Sixth Corps, Reynolds' First Corps, Sickles' Third Corps, and Brigadier

General John Gibbons' Second Division of the Second Corps. Sedgwick's job was to make Lee think this was the main attack and keep the Confederates in the defenses near the town.¹⁰ The third part was the main effort. Hooker would take three corps around Lee's left flank. Meade's Fifth Corps, Howard's Eleventh Corps, and Slocum's Twelfth Corps would cross the Rappahannock at Kelly's Ford. These units would then have to ford the Rapidan River at Germanna and Ely's Fords. By pressing on toward Fredericksburg, they could first uncover United States Mine Ford (U.S. Ford) and then Banks' Ford, both on the Rappahannock River. The former was about eight miles to the west of Fredericksburg, while the latter was five miles closer to the town. This action would allow Couch's Second Corps, minus Gibbon's Division, to cross the Rappahannock River and join the main body. Once at this location with four entire corps, the Army of the Potomac would have turned the Army of Northern Virginia's defensive works that were further to the east near Fredericksburg. Lee's position would become untenable. Hooker expected Lee to then either retreat toward Richmond or to attack the Union Army on ground of its choosing.

Engineers provided mobility to Hooker's plan. At the time of Chancellorsville, the Army of the Potomac had an Engineer Brigade commanded by Brigadier General Henry W. Benham.¹¹ The brigade had a strength of seventeen hundred men. It consisted of the Fifteenth New York Engineer Regiment, the Fiftieth New York Engineer Regiment, and the Regular Battalion of United States Engineers. Colonel Clinton G. Colgate commanded the Fifteenth New York and Colonel Charles B. Stuart commanded the Fiftieth New York.¹² The Regular Engineers normally were not attached to the Engineer Brigade, but they were for the Chancellorsville Campaign. Captain

Chauncey B. Reese commanded this unit. During the campaign, the brigade performed primarily mobility tasks by constructing pontoon bridges. The engineers did, however, execute countermobility and survivability missions during the war. They even fought as infantry at Malvern Hill in 1862.

Infantry units assumed the responsibility of countermobility and survivability at Chancellorsville. Each brigade formed its own pioneer unit by detailing men for this work. Pioneers repaired and built roads, bridges, and defenses.

Additionally, engineer officers performed staff functions involving advising the maneuver commanders on mobility, countermobility, and survivability operations. The Corps of Engineers and the Topographical Engineers each contributed to this effort. Captain Cyrus B. Comstock was the Chief Engineer of the Army of the Potomac.¹³ He was Hooker's staff officer for engineer matters.

The Topographical Engineers produced maps, performed reconnaissance, and conducted terrain analysis. Brigadier General Gouverneur K. Warren was the Chief Topographical Engineer of the Army of the Potomac. The Topographic Engineers officially disbanded as a separate branch on March 3, 1863. However, this change did not go into effect until after Chancellorsville.¹⁴

Another asset that fell under the Union Corps of Engineers for the Chancellorsville Campaign was the Balloon Corps. During the war, the Balloon Corps came under different branches, including the Signal Corps, the Quartermaster Corps, the Bureau of Topographical Engineers, and the Corps of Engineers. Thaddeus S. C. Lowe, a civilian with a government commission, was in charge of this organization.¹⁵ Their mission was to

conduct aerial reconnaissance from the Union lines. Due to a disagreement in Lowe's salary, the Balloon Corps was in a state of turmoil in April of 1863. However, Lowe promised to remain with the army for the duration of the expected upcoming campaign. The intelligence provided from the elevated platforms was outstanding. However, the analysis of the data was lacking. Chancellorsville would be the last campaign that the Balloon Corps participated in during the Civil War.

The Army of Northern Virginia consisted of two infantry corps at the time of the Chancellorsville Campaign. Lieutenant General James Longstreet commanded the First Corps and Lieutenant General Thomas J. Jackson commanded the Second Corps. Each corps consisted of four divisions plus its own corps artillery.¹⁶ A corps had about 38,000 men. However, Longstreet and two of his divisions were not present with the main body of the Confederate Army. They were further south in the Suffolk area to guard Richmond and to forage for supplies for the army.¹⁷ Remaining with Lee were the First Corps divisions of Major General Lafayette McLaws and Major General Richard H. Anderson. The four divisions within Jackson's Second Corps were commanded by Major General Ambrose Powell Hill, Brigadier General Robert E. Rodes, Major General Jubal A. Early, and Brigadier General Raleigh E. Colston. The Artillery Reserve had about 500 men. Between the Artillery Reserve and the corps artillery, the army had a total of 170 guns.¹⁸ The Cavalry Division, under Major General J. E. B. Stuart, numbered 2,500. Lee's effective strength for the Chancellorsville Campaign totaled approximately 60,000 men.

Lee's plan for the Confederate Army early in 1863 was to remain temporarily on the defensive.¹⁹ This was due, in part, to the absence of

the two First Corps divisions. However, on April 9, 1863, Lee composed a message to the Confederate Secretary of War, James A. Seddon, proposing a more audacious course of action. Lee said that if the Army of the Potomac remained in a defensive posture, the best way to relieve pressure on the Confederate Armies in the west "would be for this army to cross into Maryland."²⁰ Despite his numerical inferiority, Lee always considered offensive action to maintain the initiative. However, poor road conditions from the spring rains and a lack of provisions precluded an immediate attack into the North. Lee would not execute this part of his plan until June of 1863.

Engineer assets in the Confederate Army were more austere than the Union Army. The Confederates had recently begun to form permanent engineer units in the spring of 1863. By May of 1863, the First Engineer Regiment had been formed. "Each division had a company of the 'First Regiment' assigned for engineer duty."²¹ Infantrymen still performed many of the typical engineer tasks, such as constructing their own survivability positions and obstacles. Two of the companies of the First Engineer Regiment were designated "pontonniers" to conduct bridging tasks. However, the Confederates possessed only limited pontoon bridges captured from the Union Army.²²

Confederate Corps of Engineer and Topographic Engineer officers also occupied staff positions. They performed tasks similar to their Federal counterparts. Lieutenant Colonel W. P. Smith was the Chief Engineer for the Army of Northern Virginia.²³ Major T. M. R. Talcott was another engineer on Lee's staff. On Jackson's Second Corps staff, Captain James K. Boswell was the Chief Engineer and Jedediah Hotchkiss was the

Topographic Engineer.²⁴ Each of these men played important roles in the campaign.

Although execution of the Union plan began inauspiciously, the initial movements produced satisfactory results. The plan called for the Union cavalry to cross the Rappahannock River on April 13. Spring rains and the rising river delayed their passage until April 29.²⁵ By the afternoon of April 30, the Fifth, Eleventh, and Twelfth Corps had crossed to the south side of the Rappahannock and Rapidan Rivers and had consolidated in the vicinity of Chancellorsville. Meade's Fifth Corps formed the left of the Union line around the crossroads of Chancellorsville. Slocum's Twelfth Corps was in the center of the position to the west of Chancellorsville. Howard's Eleventh Corps was the right of the line located near the Wilderness Church.²⁶ At this point, Hooker had turned Lee's defensive works further to the east in and around Fredericksburg. Opposing the Union force of about 42,000 were initially only 8,000 Confederates of Anderson's Division. The Commander of the Army of the Potomac issued a general order that said "our enemy must either ingloriously fly or come out from behind his intrenchments and give us battle on our own ground, where certain destruction awaits him."²⁷ Despite the disparity in numbers, Lee would fight, but the destruction of the Confederate Army was by no means a foregone conclusion.

The three Union corps had uncovered United States Mine Ford, about four miles to the north of Chancellorsville on the Rappahannock River. Two divisions of Couch's Second Corps had made a demonstration at Banks' Ford, about five miles to the east of Chancellorsville, on April 28. On April 30, these divisions moved to U.S. Ford and crossed the river.²⁸ By

midnight, they linked up with Hooker's main body near the Chancellorsville crossroads.

While the right wing of the Army of the Potomac conducted the main attack upriver, the left wing made demonstrations below Fredericksburg. Sedgwick, commanding the left wing, wanted to convince Lee that the Union army would attack in this vicinity. On April 21 and April 24, two different divisions from the First Corps threatened Port Royal, twenty miles to the south of Fredericksburg.²⁹ On 29 April, Brigadier General William T. H. Brooks' division of Sedgwick's Sixth Corps and Brigadier General James S. Wadsworth's division of Reynolds' First Corps crossed the Rappahannock River a couple of miles south of the town. The Commander of the Army of Northern Virginia was not convinced the Union main attack was in the west near Chancellorsville until April 30. On this day, Lee ordered "General Jackson, at daylight tomorrow morning, will proceed to Tabernacle Church, and make arrangements to repulse the enemy."³⁰ Early's Division from Jackson's Corps remained at Fredericksburg to defend against the Union supporting attack.

As Lee shifted his main effort to Chancellorsville on May 1, Hooker began to advance to the east. This became a meeting engagement as the Confederates drove west. Sickles' Third Corps moved from opposite Fredericksburg and crossed U.S. Ford that morning. This increased Union strength on the right flank to about 70,000.³¹ The Third Corps and the Second Corps remained in reserve near Chancellorsville while the Eleventh Corps was still in defensive positions to the west around Wilderness Church. Two divisions of the Fifth Corps marched along the River Road on the Union left. Sykes' Division of this corps advanced in the center along

the Orange Turnpike. Slocum's Twelfth Corps took the right along the Orange Plank Road.³²

The Confederate First Corps divisions of McLaws and Anderson advanced west along the Orange Turnpike and the Orange Plank Road. Jackson's Corps fell in behind these divisions. By noon of May 1, the Confederates made contact with the Federals. Hooker, rather than pressing the attack, decided to revert to the defensive. He said that "a suspension in the attack today will embolden the enemy to attack."³³ Unfortunately for Hooker, Lee did not need encouragement to attack.

The Union forces were arrayed with four corps on line and one corps in reserve.³⁴ The Fifth Corps was on the left with its eastern flank tied into the Rappahannock. Next came the Second and Twelfth Corps around the crossroads of Chancellorsville. The Eleventh Corps was on the far right, with its western flank in the woods north of the Orange Turnpike. The Third Corps remained in reserve to the northwest of Chancellorsville. Hooker's decision to stop and defend rather than to continue the attack would prove to be disastrous.

Lee wanted to find a weak point to attack the Union Army near Chancellorsville. By midnight of May 1, Lee decided to attack the Union Army's right flank since it was in the air. He sent Jackson with his three divisions of 28,000 for this mission.³⁵ Lee retained control of both First Corps divisions under Anderson and McLaws. This fixing force of only 14,000 men had the mission of maintaining the attention of Hooker's five corps of 70,000 men while Jackson conducted his flank march on May 2. Additionally, Hooker that day ordered Reynolds' First Corps to move from near Fredericksburg to reinforce the Union main body at Chancellorsville.

Reynolds had to withdraw his lead division that had already crossed the Rappahannock south of Fredericksburg.³⁶ At 5:15 P. M. on May 2, Jackson commenced his attack on the flank of the Union Eleventh Corps.³⁷ He drove the Union lines back to the vicinity of the crossroads, but darkness halted the advance. While conducting a reconnaissance to cut off the Federals from U.S. Ford, Confederate troops accidentally shot Jackson.³⁸ He died of complications a week later.

Meanwhile late on May 2, Hooker ordered Sedgwick's left wing, now consisting of the Sixth Corps and Gibbon's Division of the First Corps, to attack Lee's rear from Fredericksburg. The Sixth Corps had joined the lead division already across the Rappahannock on May 1. On May 3, Gibbon crossed at the northern end of the town.³⁹ With the Sixth Corps on the left and Gibbon's Division on the right, Sedgwick attacked the Confederate positions on the heights to the west of Fredericksburg. Unlike the previous December on the same terrain, the Union forces seized the Confederate defenses.

Near Chancellorsville, J. E. B. Stuart, the Confederate cavalry commander, took over the Second Corps for the wounded Jackson. On May 3, Stuart continued the attack, drove the Union Army further back, and linked up with Lee's two divisions. This pinched out Hooker's forces in what was now a salient around Chancellorsville. Hooker withdrew these into defenses to the north. The forwardmost position was now at Bullock's, almost a mile north of Chancellorsville.⁴⁰ The defensive array was semicircular with both flanks tied into the Rappahannock River. From left to right the positions were the Twelfth Corps, the Eleventh Corps, the Second Corps, the Third Corps, the Fifth Corps, and the First Corps. Although not all of

these units had been engaged, Lee defeated this wing of nearly 90,000 with only 42,000 of his own.

Hooker, now beaten more morally than physically, called on Sedgwick's Corps of 24,000 to save him. Leaving Gibbon's Division to guard Fredericksburg, Sedgwick drove inland on the Orange Plank Road on May 3.⁴¹ While Early's Confederate Division retreated to the southwest of the town, Brigadier General Cadmus M. Wilcox's Brigade from Anderson's Division delayed back toward Salem Church.⁴² Salem Church was four miles west of Fredericksburg along the Orange Plank Road. At about the same time, Lee realized Hooker was pulling back and was not likely to resume the offensive. Lee again divided his forces and took the initiative. Leaving Stuart with the Second Corps to occupy Hooker's six corps, Lee took McLaw's Division and a brigade from Anderson's Division to confront Sedgwick.⁴³ These units reinforced Wilcox at Salem Church. Sedgwick attacked but was unable to penetrate the Confederate lines. By May 4, Early returned with his division and reoccupied Marye's Heights.⁴⁴ Later that day, the remainder of Anderson's Division also arrived. Sedgwick, surrounded on three sides with his back to the river, was forced to withdraw back across the Rappahannock at Banks' Ford. By 3 a. m. on May 5, the Sixth Corps completed its crossing. Gibbon's Division, still at Fredericksburg, also recrossed to the north bank that morning.⁴⁵

Meanwhile, General Stoneman's Union cavalry raid accomplished little. Federal cavalry in his rear area did not cause Lee to withdraw toward Richmond as Hooker had hoped. The raiders cut several rail lines and intercepted supplies along roads leading toward the Confederate Army. However, they failed to sever Lee's lines of communication for a prolonged

period of time. Guiney's Station, the Army of Northern Virginia's main supply depot twelve miles south of Fredericksburg along the Richmond Fredericksburg and Potomac Railroad, remained secure.⁴⁶ This was also the location where the wounded Jackson would be taken and ultimately die of pneumonia on May 10.⁴⁷ The cavalry threatened the capital of Richmond, but never seriously. Stoneman's mounted force could have been much better employed in the vicinity of Hooker's main body rather than on a raid deep in the Confederate rear. If the cavalry had a security mission to protect the Union right flank that was in the air, Jackson's attack on May 2 could have been repulsed. At a minimum, cavalry on this flank would have prevented surprise and the Confederate assault would not have been as successful.

Near Chancellorsville, Hooker also decided to retire north across the Rappahannock River. The Union troops fell back to United States Ford. On May 6, they began to retreat across the river.⁴⁸ By 9 a. m., the last Federal units finished crossing. Although the Army of the Potomac had twice the strength of the Army of Northern Virginia, the latter clearly won a decisive victory.

The preliminary plans, engineer organizations, and results of the maneuvers provide glimpses of the importance engineer battlefield functions had to the Chancellorsville Campaign. Analysis in depth of mobility, countermobility, survivability, and topographic engineering will reveal the significance each impacted the operational and tactical fights. How well the armies implemented and properly synchronized these aspects greatly contributed to their success and failure on the battlefield. Other than its bridging effort, the Union Army of the Potomac did not properly

consider the implications of mobility, countermobility, survivability, and topographic engineering on its operations. This clearly contributed to its defeat on the battlefield. The Confederate Army of Northern Virginia, on the other hand, made better overall use of the engineer battlefield functions, which partially accounts for its resounding victory.

Endnotes

¹Richard O'Shea, Battle Maps of the Civil War (Tulsa, OK: Council Oak Books, 1992), 85.

²Edward J. Stackpole, Chancellorsville (Harrisburg, PA: Stackpole, 1988), 63.

³Stackpole, Chancellorsville, 373.

⁴Edward J. Stackpole, Fredericksburg (Harrisburg, PA: Stackpole, 1991), 53.

⁵Ibid., 89.

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⁴⁵Ernest B. Furguson, Chancellorsville 1863 (New York: Vintage Books, 1993), 311.

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CHAPTER TWO

MOBILITY AND COUNTERMOBILITY

The engineer battlefield functions of mobility and countermobility had a profound effect on operations during the Chancellorsville Campaign. Existing and reinforcing obstacles caused many changes to the tactical plans that influenced the eventual outcome of the battle. The forests, rivers, and enemy positions presented many challenges to mobility to the forces on both sides. The Union's Engineer Brigade built many pontoon bridges to span the rivers, which permitted operational maneuver by the Army of the Potomac. Conversely, existing obstacles and man-made reinforcing obstacles strengthened defenses and gave some advantages to the defenders. With obstacles to the front, defenses became more formidable because attackers spent more time within field of weapons fire. Many of the principles of mobility and countermobility operations followed during Chancellorsville still apply. According to current United States Army doctrine, "mobility enables the force commander to maneuver tactical units into positions of advantage over the enemy."¹ Gap crossing, counterobstacle operations, and combat roads construction are present mobility tasks that were pertinent during the campaign. The complement to mobility is countermobility.

"Countermobility augments natural terrain with obstacle systems in accordance with the commander's concept."² Countermobility operations

impede the enemy's ability to maneuver. This can improve the effectiveness of defensive engagements. During Chancellorsville, there were attempts to disrupt enemy movements as a tactic by military units, however, by far the most significant impediments were terrain features of the Virginia countryside.

The two general categories of obstacles are existing and reinforcing. Existing obstacles are present on the terrain prior to the military operations. The subclassifications of existing obstacles are natural and cultural.³ Natural obstacles are parts of the terrain not altered by man. Important natural obstacles in the area of operations for the campaign were the Rappahannock and Rapidan Rivers and the heavily forested area known as the Wilderness.

The Rappahannock River flowed generally from northwest to southeast. A major tributary of the Rappahannock was the Rapidan River. It flowed generally from west to east and merged with the Rappahannock approximately ten miles to the west of Fredericksburg. There were numerous fords along these rivers, but the spring rains made many of these crossing sites impassable on foot. This necessitated the construction of military bridges.

The Wilderness was a thick forest of about one hundred square miles located about ten miles west of Fredericksburg. The dense undergrowth made this an even more significant obstacle to military maneuvering.

Cultural obstacles, such as the town of Fredericksburg, are emplaced by man for other than military reasons. Finally, "reinforcing obstacles are placed on the battlefield through military effort and are designed to slow, stop, or canalize the enemy."⁴ Both sides made extensive

use of abatis during Chancellorsville. An abatis is made from a group of felled trees with the branches pointing toward the enemy. The abundance of trees and limited avenues of approach along the roads made abatis excellent obstacles.

A critical mobility task performed during the Chancellorsville Campaign was gap crossing. According to the current U.S. Army Field Manual 5-101, Mobility, the "term military gap is defined as any battlefield terrain feature, wet or dry, that is too wide to be overcome by self-bridging."⁵ Military units can cross gaps either by fording or by river-crossing operations. Since the Rappahannock and Rapidan Rivers initially separated the armies, gap crossing was significant.

The Union Army achieved surprise during the initial phases of the campaign through their superior river crossing capability. Hooker planned to get his main body onto Lee's left flank far enough upriver to avoid the Confederate defenses. The problem arose, however, that in order to envelop the flank of the Confederate defenses, the Union Army would have to cross the Rappahannock upriver from its confluence with the Rapidan. This meant that the initial attacking force of the Fifth, Eleventh, and Twelfth Corps would have to cross first the Rappahannock and then the Rapidan. Usually a commander prefers to cross rivers only when necessary, but the anticipated benefit of surprise convinced Hooker to execute this plan.

There were numerous fords on the rivers, however, most were not passable because of the spring rains. Colonel H. L. Scott's Military Dictionary, published in 1861, said that the "depths of fords for cavalry should not be more than 4 feet 4 inches, and for infantry 3 feet 3 inches."⁶ Cavalry could use many of the fords, but the infantry could not.

Because of this, the Engineer Brigade had to construct bridges to cross the army.

Contemporary influential writers of military theory acknowledged the difficulty of river crossing operations. Dennis Hart Mahan was an instructor of military art and engineering at West Point before the Civil War. In 1836, his book Field Fortification was published for use as a textbook at the Military Academy. Professor Mahan taught many officers on both sides. In his book, Mahan said "there is no military operation of a more delicate character, and of more doubtful success, than the passage of a river in the face of the enemy."⁷ Another contemporary military theorist and philosopher, Baron Antoine Henri de Jomini, published The Art of War. This landmark book was first translated into English in 1854, however, many Civil War leaders knew about Jomini through the teachings of Mahan. Before he became an instructor at the United States Military Academy, Mahan had studied Jomini's writings in France. The Art of War explained a number of general rules for river crossing and stated that these operations "are of an exceedingly delicate character."⁸ These authors provided practical advice on the procedures for crossing a river. In most instances during the Chancellorsville Campaign, the Union Army heeded this advice.

The main task of the Engineer Brigade of the Union Army at Chancellorsville was to assist mobility during river crossings. They assembled pontoon bridges and constructed timber trestle bridges. Captain J. C. Duane of the Corps of Engineers wrote his Manual for Engineer Troops in 1862. This manual details the specific techniques and procedures for military engineering. Duane explains that "Military bridges are composed of a road-way and its supports; the first consists of beams, or barks

. . . and covered with plank, called chess."⁹ Below the roadway were the supports. "The supports, from which the bridge takes its name, may be either fixed, as trestles . . . or floating, as pontoons [sic]."¹⁰ The two types of pontoons the army employed were canvas and wood. The wood pontoon bridge, or Modified French Bridge Equipage, was the standard bridging equipment. Each train consisted of thirty-four wagons each loaded with a pontoon boat, twenty-two chess wagons carrying the wooden roadway planking, eight trestle wagons, four tool wagons, and two forge wagons.

The canvas pontoon bridge was not as common as the wood variety. The pontoons were much lighter and easier to transport. They were designed for use by advanced guards because of these characteristics. There were also fewer wagons in a train. It consisted of twenty-nine pontoon wagons, fifteen chess wagons, one abutment wagon, two wagons with anchors and cables, and one tool wagon.¹¹ The Union Army had one canvas pontoon train that they laid at a key crossing sight.

The Fifteenth New York Engineers emplaced a canvas pontoon bridge across the Rappahannock at Kelly's Ford, 22 miles above Fredericksburg, on April 28. Three corps, along with the cavalry, crossed over this bridge on April 29. The units then crossed the Rapidan at Germanna and Ely's Fords. By the afternoon of April 30, all three corps reached the vicinity of Chancellorsville, which was at the intersection of the Orange Turnpike and the Orange Plank Road. Hooker had turned Lee's left flank.

Meanwhile, General Sedgwick, the commander of the Union left wing, planned a crossing of the Rappahannock near Fredericksburg. Troops would cross three miles below the town at Franklin's Crossing and two miles farther downstream at Pollock's Mill Creek. Engineers had to lay two

pontoon bridges at each site by 3:30 A.M. on April 29. General Benham ordered soldiers to carry the boats to reduce the noise that the horse-drawn wagons would make.

A major difficulty with Sedgwick's plan was a lack of clearly defined command and control, which is essential in a river crossing operation. It was not perfectly clear who was in charge of the crossing. However, an order from General Hooker to General Sedgwick dated April 27 attempted to clarify the situation. It read, in part, that the "bridges, two at each crossing, to be laid complete before 3.30 a. m. [sic] of the 29th, under the supervision of General Benham, who is charged with the responsibility thereof."¹² Concerning manpower to construct the bridges, the order went on to say that "Any troops needed to assist the Engineer Brigade in the performance of this duty will be furnished to General Benham, under the direction of General Sedgwick."¹³ Although Hooker's order specified Benham as responsible to build the pontoon bridges, it did not grant the engineer authority over the entire crossing operation. Additionally, Sedgwick's subordinate maneuver commanders likely never saw Hooker's correspondence. Confusion over command and control of the river crossing led to a delay in crossing the Rappahannock. The holdup disrupted Sedgwick's timetable to attack and occupy Lee at Fredericksburg.

General Benham personally supervised operations at both crossing sites. At Franklin's Crossing, he tasked the Battalion of U. S. Engineers and the Fifteenth New York to each construct one wood pontoon bridge. These bridges were for Sedgwick's Sixth Corps. At Pollock's Mill Creek, the Fiftieth New York had responsibility to build two wood pontoon bridges for Reynolds' First Corps. While at Pollock's Mill Creek, General Benham

ordered operations to begin at 11:30 P.M. on April 28. He arrived at Franklin's Crossing around midnight and discovered men carrying only a few boats to the river. He was highly upset that the timetable was behind schedule. As Benham tried to hasten the crossing, his horse was shot from under him by a sharpshooter across the river.

At Franklin's Crossing, the assault squads did not linkup with the boats at the designated time. The carrying parties reported on time to haul the boats to the river, however, they could not locate the infantrymen designated to cross in the boats. Benham thought he was in charge of the crossing. While looking for the crossing parties, Benham got into an argument with Brigadier General David A. Russell, the Third Brigade Commander of the First Division, Sixth Corps. The engineer ordered the infantryman to provide the crossing squads. After Russell refused, Benham attempted to arrest him. The first boats did not cross the river until shortly after dawn. Captain Reese, the commander of the U.S. Engineers, and Major Walter A. Cassin of the Fifteenth New York started building the bridges about 6:00 A.M..

Benham returned to Pollock's Mill Creek and found the situation worse than at Franklin's Crossing. During the night, Brigadier General James S. Wadsworth, a division commander, countermanded the order for men to carry the pontoon boats. As at Franklin's Crossing, crossing squads did not rendezvous with the boats on time. Most of the boats were in the river by daylight, but none had crossed due to enemy rifle fire. Wadsworth ordered an assault crossing by the famous Iron Brigade at 9:00 A.M. The Sixth Wisconsin and Twenty-fourth Michigan boarded pontoon boats for the assault crossing. Engineers served as oarsmen in the boats. As they rowed

across, they came under fire from the far shore. Once on the far shore, the two assaulting regiments conducted a bayonet charge and routed the thin Confederate defenses close to the river. This action allowed the engineers to complete the bridges.

Benham believed there were two reasons for the delay. One was the failure of the crossing squads to linkup with the boats. The other was the absence of a single authority responsible for the river crossing.

The Union Army conducted the mobility operation of combat road construction to facilitate the advance. Two divisions of the Second Corps under Couch moved to Banks' Ford, "where a demonstration was made to keep the Confederates confused, while the road to United States Ford, farther up the river, was repaired."¹⁴ The purpose of the demonstration was to occupy Lee's attention and to provide security to the river crossing of main effort. The road improvement permitted Couch to reinforce Hooker's main body quickly.

Engineers constructed more bridges to support the Union offensive. On April 30, the Fiftieth New York laid two pontoon bridges thirteen miles above Fredericksburg at United States Ford. The Second Corps used these bridges to linkup with the right wing of the army by midnight of that day. On May 1 the Third Corps crossed at this location and on May 2 the First Corps used the same bridges. By the end of May 2, Hooker controlled six corps at Chancellorsville due to the bridging effort of the engineers.

The Union Army began their withdrawal from the southern side of the Rappahannock on May 3. Engineers relocated pontoon bridges to assist this movement. Sedgwick had attacked west from Fredericksburg, but Lee shifted forces to contain him near Salem Church. With his back to the

river, Sedgwick ordered the Fiftieth New York to retrieve their bridge at Pollock's Mill Creek and emplace it at Banks' Ford. The Fifteenth New York laid another bridge here the following day. These bridges allowed Sedgwick to pull out of a dangerous salient.

The Union Army required combat road construction to assist the withdrawal. "The troops of each corps labored to cut new roads, several as long as three miles, from their positions to United States Mine Ford on May 5."¹⁵ These roads were necessary so that all six corps would not have to use a single road during the retrograde. This would ease movement to the crossing site and prevent a possible catastrophe if the Confederates had attacked the potentially confused logjam.

United States Ford was the place where the main body of the Union Army would withdraw across the Rappahannock River. The two bridges constructed on April 30 were still in place. The Fifteenth New York built a third bridge here on May 4. Despite the strong position of Hooker's force, he still felt threatened. Hooker withdrew the six corps across these bridges on May 6.

The engineers also extricated the Union force left at Fredericksburg. Brigadier General John Gibbon's division held the town while Sedgwick attacked inland. On May 3, the Fifteenth and Fiftieth New York relocated bridges to the northern end of Fredericksburg. The Battalion of U. S. Engineers disassembled their bridge at Franklin's Crossing into four rafts. In an amazing feat of courage, the Regulars then rowed the rafts nearly two miles upriver under fire. They reassembled the bridge on the southern side of Fredericksburg. Gibbon retired over these bridges on May 5.

The primary reinforcing obstacles used for countermobility effort during Chancellorsville were abatis. These were effective when tied into the existing obstacles of the forests because there were limited roads and other avenues of approach in the area. Abatis, when used in conjunction with fighting positions, were excellent obstacles.

One other obstacle possibly employed during Chancellorsville was wire. "Wire was occasionally used to strengthen Civil War entrenchments: not the barbed wire of twentieth-century warfare"¹⁶, but plain wire without the sharp barbs. At Chancellorsville, however, wire was not used as a protective obstacle near entrenchments. Colonel Thomas C. Devin, a Union cavalry brigade commander, reported a rumor prior to the initial moves of the campaign that "at the fords the water has been filled with iron wire-work, calculated to entangle the feet of horses, while sharpshooters pop them off."¹⁷ There is no further mention in the Official Records of this rumor. If the Confederates did use wire, it did not present a significant hindrance. Overall, "the effect of wire obstacles on the course of the war can only be called 'negligible'."¹⁸ However, the report by Devin did express concern over the impact this obstacle and its novel employment could have on the Army's mobility.

A modern day tenet is that units must cover obstacles by fire. This is not a recent doctrinal development. Dennis Hart Mahan wrote in 1836 that "no obstacle will be of service to the assailed which is not within striking distance of his weapons."¹⁹ Mahan taught the future officers well. Abatis were effective defenses during Chancellorsville because infantry covered them by fire. However, better obstacles may have assisted the right side of the Union Army during Jackson's flank attack.

Mahan also said that an abatis "is an excellent obstacle in a wooded country . . . it may be relied on as a security against a surprise."²⁰

When Hooker decided to halt the advance on May 1, both sides began to construct defenses. "Trees were felled in front of the line to form abatis . . . the woods resounded with the strokes of a thousand Confederate axe-men engaged at the same work."²¹ However, for the Union side, their own defenses became a psychological obstacle to their commander. Hooker wanted Lee to attack him where the defenses were strong. Simultaneously, Hooker feared conducting frontal attacks into Lee's obstacles. The corps commanders wanted to continue the attack to the east and escape the tangled undergrowth of the Wilderness. The difficult terrain negated their overwhelming advantage in numbers. Lee would attack Hooker, but he would avoid the Union obstacles in the process.

Another countermobility consideration neglected by the Union Army was to tie the flanks into obstacles. One of Jomini's principles for selecting tactical positions was "to have the flanks well protected, either by natural or artificial obstacles, so as to render impossible an attack upon their extremities."²² Hooker accomplished this with Meade's Fifth Corps on the left flank because they tied their position into the Rappahannock River. However, the left flank of Howard's Eleventh Corps was in the air. Its flank was not solidly anchored into any existing or reinforcing obstacle. Instead, the defensive line ended in the Wilderness. As Jackson would prove, this forest was not impenetrable.

Sedgwick's supporting attack in Fredericksburg was successful, in part because of the lack of Confederate obstacles. Once the Union Army crossed the Rappahannock, there were fewer obstacles than near

Chancellorsville. For one, the terrain was not heavily wooded like the Wilderness. There were also fewer man-made obstacles in front of Marye's Heights and other high ground the Confederates had defended during the Battle of Fredericksburg. Colonel B. G. Humphreys, Commander of the Twenty-first Mississippi, said that "the advance of the Federals was rapid because all the fences, orchards, etc., that had delayed the enemy in the assaults of Dec. 13, 1862, had been destroyed."²³ These items had been used for firewood by the Confederates. A more significant factor in the successful Union assaults was that there were less Confederates defending the lines than in December. Lee left only Early's Division and Barksdale's Brigade to defend Fredericksburg. However, the lack of obstacles did contribute to the Union success.

The Union Army withdrew behind defensive positions to the north of Chancellorsville after Jackson's flank attack of May 2. Sedgwick expected support from Hooker's force after the Sixth Corps attacked inland. In discussing the action of the main body on May 3, an officer in this corps wrote somewhat derisively that "after 10 o'clock Sunday morning axes and spades were used at Chancellorsville more than the guns."²⁴ Rather than assuming the offensive to assist the Sixth Corps in their fight at Salem Church, Hooker kept his force behind his defensive line. The Union Army constructed abatis all along the front to prevent the surprise they had on May 2.

The outnumbered Confederates still tried limited attacks against the Union main body north of Chancellorsville. In an attempt at counterobstacle operations, the Confederates set fire to the abatis in front of the Federals on May 4. Major St. Clair Mulholland of the 116th

Pennsylvania led a detail that repeatedly went forward to extinguish the flames while the Confederates shot at them.²⁵ He received the Medal of Honor for this action.

In conclusion, the mobility battlefield function was vital to operations in the campaign. The Union probably was more effective at mobility operations because of their strong bridging capability. This allowed the operational maneuvers that Hooker planned and executed to initially envelop the main Confederate defenses. Mobility allowed him to avoid Burnside's mistake during Fredericksburg. Hooker was able to cross the Rappahannock River despite the fact that the fords were impassable for infantry. During the initial advance, this allowed the Union Army to mass combat power on the south side of the river.

Bridging also became important at the end of the campaign to extricate the defeated army. On May 4, Sedgwick reached Salem Church. However, the Confederates cut the Sixth Corps off from the bridgehead at Fredericksburg. Fortunately, they were able to secure Banks' Ford. The pontoon bridges erected here saved this corps on May 5. Without bridging at the end of the operation, the Union Army would have suffered a more serious defeat. The bridges preserved the Army of the Potomac to fight two months later at Gettysburg.

Counter mobility operations were not decisive in the campaign, but they did play a role. The existing obstacles of the Wilderness and the Rappahannock River were more significant than the reinforcing obstacles such as abatis. Forests and the rivers shaped how the commanders on both sides had to conduct the campaign. The Confederates used the forests to their advantage better than the Union Army because they were able to

maneuver despite the obstacles to mobility. The Union Army remained on the defensive in the obstacle of the Wilderness for the majority of the time. They did not fight their way into the more open terrain to the east to take advantage of their numerical superiority. The Confederates, meanwhile, used the Wilderness to conceal Jackson's successful flanking maneuver. Reinforcing obstacles, such as abatis, contributed to induce both sides to avoid frontal attacks into the defenses. Around Chancellorsville, the Union did this by remaining on the defensive and waiting for the Confederates to attack them. The Confederates, however, bypassed the obstacles in front of the Union lines by attacking the flank of the Eleventh Corps on May 2. The engineer battlefield functions of mobility and countermobility had positive and negative effects on the tactical and operational maneuvers of both sides.

Endnotes

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²Ibid., 10.

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⁷Dennis Hart Mahan, Field Fortification (New York: Wiley and Long, 1836), 198.

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¹²Ibid., 268.

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¹⁶Paddy Griffith, Battle in the Civil War, (Camberly, United Kingdom: Fieldbooks, 1986), 34.

¹⁷Official Records, XXV, Part 2, 276.

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²⁴Huntington W. Jackson, "Sedgwick at Fredericksburg and Salem Heights", in Battles and Leaders of the Civil War, vol. III, 231.

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CHAPTER THREE

SURVIVABILITY

Survivability operations allowed Lee to win outnumbered and caused Hooker to lose his offensive spirit during the Chancellorsville Campaign. The armies constructed extensive fighting positions before and during the operations. These positions, in conjunction with countermobility obstacles, made the possible casualties due to direct frontal assaults prohibitive. To solve this, the armies used envelopment as a form of maneuver.

Current doctrine defines survivability as providing "concealment and protection from the effects of enemy weapons."¹ An important part of survivability tactics includes "constructing fighting and protective positions for both individuals and equipment."² Entrenched positions reduce losses to personnel and weapon systems and provide the additional benefit of giving confidence to soldiers. They will fight better and use their weapons more effectively. These advantages were in the rudimentary stages of development in the Civil War.

Military writers prior to the Civil War also realized some of the advantages of survivability positions, but they did not foresee the widespread use by the close of the war. Jomini believed that entrenched positions may be used "as points of departure for an offensive operation . . . or as a refuge for a defeated army."³ Jomini's view was short-

sighted. At the Battle of Fredericksburg, the Army of Northern Virginia effectively employed entrenched positions in a successful defensive fight. At Chancellorsville, they again used entrenched positions extensively, although more as points of departure for offensive operations. Mahan also addressed the subject of entrenchments thoroughly in his textbook Field Fortification, which was published in 1836. He wrote that to "enable troops to fight with advantage, the entrenchments should shelter them from the enemy's fire . . . and afford the assailed the means of using their weapons with effect."⁴ However, he cautioned that "entrenchments should be regarded only as accessories in the defence of a position."⁵ The West Point instructor realized that survivability positions assisted in strengthening a defense.

The Battle of Fredericksburg showed the futility of frontal assaults across open terrain against well-entrenched troops. Hooker, then the Center Grand Division Commander, personally saw the bloodshed when his troops were committed late in the attack. He had been appalled by the casualties suffered by other units and had urged Burnside to halt the useless assaults. Burnside refused this request and ordered Hooker to attack. Brigadier General Andrew A. Humphrey's Division, Fifth Corps, of Hooker's Grand Division charged the stone wall in front of Marye's Heights where many other assaults had failed that day. Their gallant attack left 25 percent casualties and did not reach the wall. Brigadier General George Sykes' Division of Regulars, also of the Fifth Corps, was preparing for their turn into the deadly ground when Hooker intervened. "Finding that I had lost as many men as my orders required me to lose, I suspended the attack,"⁶ Hooker declared in his official report.

Hooker now recommended that the army withdraw across the river. Burnside again did not heed his subordinate's advice. Sykes' Division was ordered to conduct a relief in place of the advanced line of the Second Corps. Burnside's refusal to admit the defeat that was obvious to everyone else on the battlefield cost the Regular Regiments two-hundred and four casualties.⁷ The total losses for just these two divisions were over one-thousand men. This action left a lasting impression on Hooker. There were two major results from this affair. First, Burnside and Hooker began a quarrel that ultimately led to the former's relief and the latter's appointment as the Commander of the Army of the Potomac. It also gave Hooker a debilitating fear of frontal attacks against entrenchments. Years after the war, he said "I never think of this ground without a shudder. Here on this ground . . . all the infantry he could use was disposed behind earthworks and stone walls."⁸ This mindset caused Hooker to develop an excellent campaign plan for the initial phase. He decided to conduct a wide envelopment of Lee's defenses. Unfortunately, it additionally caused Hooker to forsake the initiative once the Confederates did not retreat to Richmond.

Lee further strengthened the defensive positions around Fredericksburg during the winter and early spring. The Army of Northern Virginia dug additional rifle pits and gun emplacements on the southern side of the Rappahannock. After the battle in December "and the subsequent attempts to pass the Rappahannock, Lee had extended his purview to the guarding of all practical crossings of that stream."⁹ He extended the defensive line upriver and downriver from the town. By the end of April, 1863, the defenses were on the "heights south of the Rappahannock from

Skenker's Creek to United States Ford (a distance of about twenty-five miles), having continuous lines of infantry parapets throughout."¹⁰

According to Warren, the Chief Topographical Engineer of the Army of the Potomac, the "earth parapets, placed so as to sweep with musketry every crossing-place and practicable slope, were in three lines from the water's edge."¹¹ The result of this survivability effort was an extremely strong defensive position behind the significant obstacle of the Rappahannock River. December's battle demonstrated the advantage well-entrenched troops had over attackers. The Army of Northern Virginia occupied relatively static positions and they had ample time to prepare the defenses. "These fortifications marked a definite stage in the evolution of the field defenses that were to be one of Lee's most historic contributions to the science of war."¹² Rifled muskets, with their improved range and accuracy, when combined with the psychological and physical protection of entrenchments, created an almost insurmountable barrier to assaulting troops. Envelopment of the defender's flank was the best solution to this problem, which both sides attempted at Chancellorsville.

Hooker decided on his campaign plan of a wide envelopment of Lee's lines as a result of a lesson learned from Fredericksburg. Burnside originally intended to attack the Confederates at this town because it was the most direct route to Richmond. He also believed the Confederates were widely dispersed and not concentrated near Fredericksburg.¹³ However, delays by the Union Army allowed Lee to mass his forces and defeat the frontal attacks relatively easily. Hooker believed he could avoid the main defenses by enveloping Lee's left. He wrote to President Lincoln that "I have concluded that I will have more chance of inflicting a heavier blow

upon the enemy by turning his position to my right."¹⁴ Hooker accepted risk in this plan because the Fifth, Eleventh, and the Twelfth Corps would have to cross both the Rappahannock and the Rapidan Rivers in order to envelop Lee's strongest defenses. However, the possible advantages the Union Army could gain through surprise by avoiding frontal attacks outweighed the hazards. During the execution of the plan, Lee did not firmly believe that the Union main attack was on his left flank until April 30. By this time, Hooker had assembled three corps and most of another corps around Chancellorsville. He turned the strong Confederate positions along the Rappahannock River.

Lee, meanwhile, began to react to the Union movements on April 30. He withdrew Anderson's Division from United States Ford to defensive positions to the east of Chancellorsville. Anderson, with only three of his five brigades currently with him, selected a location about three miles from Chancellorsville near Zoan Church. His mission was to delay along the Orange Turnpike and Orange Plank Road until reinforcements arrived. Lee knew from captured prisoners that at least three Union corps were concentrating at Chancellorsville. This meant that a force of over 40,000 troops confronted Anderson's Division of only about 5,000. To slightly improve the odds, Lee gave Anderson specific instructions to entrench. The orders to Anderson on April 30 read "I hope you have been able to select a good line and fortify it strongly. . . . Set all your spades to work as vigorously as possible."¹⁵ Anderson's Division spent the rest of that day constructing trenches and breastworks. Lee also dispatched Engineer staff officers to direct this survivability effort. Anderson reported that "Col. W. P. Smith, chief engineer Army of Northern Virginia, and Captain

Johnston, of the Engineer Corps, who had been sent . . . to establish a line of entrenchments."¹⁶ According to the eminent historian of the Army of Northern Virginia, Douglas S. Freeman, it "was the first time, in open operations, that Lee had ordered the construction of field fortifications."¹⁷ Shortly after taking command of the Army, Lee was known as the "King of Spades" by the troops due to his penchant for making the men dig protective positions in front of Richmond prior to the Seven Days' Battle. However, he had never before directed the army to construct fortifications while a battle was in progress. Lee, whose Regular Army branch was the Corps of Engineers, realized that entrenchments were a combat multiplier at Fredericksburg. The Confederates' ability to quickly construct fighting positions "and the adequacy of the cover they afforded the army were not forgotten. From this type of work there was only one step to field fortification."¹⁸ Anderson's Division at Chancellorsville, facing overwhelming odds, needed all the assistance available. The U.S. Army War College Guide to the Battles of Chancellorsville and Fredericksburg declares that in "this respect, at least, what happened at Fredericksburg and particularly at Chancellorsville served as a watershed in the evolution of infantry tactics."¹⁹ The hasty entrenchments they dug foreshadowed how battlefields would look at the end of the Civil War and the First World War.

One reason Hooker stopped after his successful flanking movement on April 30 was his fear of repeating Burnside's mistake at Fredericksburg. Hooker noted that on May 1 "General Lee had moved out with his whole army, and by sunrise was in firm possession of Banks' Ford, had thrown up this line of breastworks . . . bristling with cannon."²⁰ Instead of an

audacious advance, Hooker's force dug entrenchments on April 30. The delay allowed Lee to bring up reinforcements to the Chancellorsville area.

By May 1, Hooker faced Lee's main body near Chancellorsville. The Union Army began a cautious movement to contact to the east along the River Road, the Turnpike, and the Plank Road. On the Confederate side, Jackson arrived from near Fredericksburg to take charge of Anderson's force. He decided to take the initiative and advance to the west along the Turnpike and the Plank Road. Shortly after the initial meeting engagement, Hooker withdrew back to the entrenchments around Chancellorsville. Meade, the Fifth Corps Commander, became enraged by this action. "My God, if we can't hold the top of a hill we certainly cannot hold the bottom of it"²¹ he told other senior commanders. Hooker, explaining his decision to the Second Corps Commander, said, "It is all right, Couch, I have got Lee just where I want him; he must fight me on my own ground."²² The Commander of the Army of the Potomac believed from the conception of his plan that if his flanking maneuver were initially successful, Lee would either retreat toward Richmond or be forced to attack the Union Army at a disadvantage. Lee, always thinking "how to get at those people," chose the latter course of action. Hooker wanted to assume the strategic and operational offensive by driving toward the Confederate capital. However, he was willing to take the tactical defensive because he saw firsthand the advantage this afforded at Fredericksburg. While Lee used the stability of defensive positions to launch offensives from, Hooker conceded the initiative once his army occupied them.

The Union Army reinforced their defenses on May 2. Captain Cyrus B. Comstock, the Chief Engineer of the Army of the Potomac, went with

Hooker to inspect the lines. The Eleventh Corps, under Howard, occupied the extreme right of the Union Army. He reported that "Hooker noticed the breastworks, unusually well built by Schurz and Devens. As he looked over the barricades . . . he said to me, 'How strong! How strong!'"²³ The keen eye of the Engineer Comstock, however, discerned gaps in the defenses. He told Howard, "General, do close those spaces!" Howard said, "The woods are thick and entangled; will anybody come through there?" "Oh, they may!"²⁴ replied Comstock. Although the Wilderness was an obstacle to mobility, it also provided concealment to any force willing to attempt to penetrate it.

Meanwhile, Lee had joined his main body southeast of Chancellorsville on May 1 and began to formulate a plan of attack. The Confederate Army entrenched positions opposite the Union Army around Chancellorsville. The Confederates, however, did not plan to stay on the defensive. Once Stuart's cavalry discovered that the right flank of the Union Army was exposed, Lee decided to attack there. In his meeting with Jackson, Lee asked "What do you propose to make this movement with?" "With my whole corps,"²⁵ replied Jackson. Lee then said, "What will you leave me?" "The divisions of Anderson and McLaws,"²⁶ Jackson answered. This meant that Jackson would attack with 28,000 men and Lee would only have 14,000. Lee would have to fix the attention of Hooker's main body of nearly 70,000 men while Jackson got into position. In many respects, this operation was similar to a mobile defense in current U.S. Army doctrine. Lee's force of two divisions would conduct an area defense to hold the enemy in place. Jackson's Corps, with the preponderance of combat power, was the mobile striking force. Jackson's objective was force oriented. Lee's boldness and his estimate of the enemy allowed such an audacious

maneuver. Lee derived his boldness because the stationary force had strong survivability positions. This combat multiplier allowed him to accept risk with an economy of force of two divisions. The resulting mass of Jackson's Corps as the striking force would provide tremendous dividends. Lee also believed that Hooker was afraid to attack. As Jomini said, "the best thing for an army standing on the defensive is to know how to take the offensive at the proper time, and to take it."²⁷ Hooker conceded the initiative while behind survivability positions, expecting the enemy to conduct costly frontal attacks against him. Lee, however, used survivability positions as a means to mass combat power elsewhere and to seize the initiative for decisive results.

Jackson began his flank march on May 2. Hooker warned Howard, the Union Eleventh Corps Commander, to strengthen his flank to the west, although earlier he had praised the defenses to the south. "The right of your line does not appear to be strong enough. No artificial defenses worth naming have been thrown up."²⁸ Howard claimed that he did not receive this message. Hooker, despite his flaws, did have sufficient foresight to plan for the possibility of a flank attack.

Regardless of who was at fault, the end result was that the Eleventh Corps defenses were not strong enough. The corps' right flank was refused, but the survivability positions only extended for a few hundred meters north of the Turnpike. Jackson attacked about 5:15 p. m. on May 2 with his entire corps and outflanked the defenses. Howard's men put up some resistance, but they could not stop the onslaught from an unexpected direction. Brigadier General Nathaniel C. McClean's brigade had to fight from the other side of their breastworks. Colonel John S. Lee of the

Fifty-fifth Ohio wrote that "a rifle pit is useless when the enemy is on the same side and in rear of your line."²⁹ In one almost humorous incident of survivability, Colonel Edward E. Cross of the Fifth New Hampshire found a man hiding behind a wooden crackerbox. The regimental commander kicked the box first before literally kicking some common sense into the soldier.³⁰ The final resistance put up by the Eleventh Corps, "was made by the brigade of Adolph Bushbeck . . . who took over some inadequate rifle pits dug earlier in the day."³¹ Darkness and confusion caused by the troublesome obstacle of the Wilderness halted the Confederate advance.

After Jackson's attack, the Army of the Potomac began to reorient its defense. "During the night the engineers had traced out a new line three-quarters of a mile to the rear of Chancellorsville."³² The soldiers began to feel the importance of survivability positions. One of them wrote, "Notwithstanding fatigue and weariness, we began at once to build earthworks, as every man felt that his own safety as well as that of the army might soon be at stake."³³ Since there were limited numbers of spades available, the soldiers improvised. "Knives, bayonets, plates, and dippers were enlisted, and by continuous activity substantial breastworks were completed when daylight appeared."³⁴ Hooker, already beaten psychologically, decided that the army would pull back to the new line of works north of Chancellorsville. He said, "I directed my engineers to establish a new line . . . and at the same time stated to them that we would probably have to move on it as soon as the enemy opened on us."³⁵ Hooker, still in a defensive mindset despite his numerical superiority, wanted Lee to attack him again. This now shorter line was tied in on both sides to the Rappahannock River. The Army of the Potomac would remain in

these positions until May 6, when they retreated across United States Mine Ford.

Hooker's fixation with strong survivability positions for his army and fear of attacking the Confederate defenses permitted Lee to split his forces again on May 3. Lee was able to concentrate against Sedgwick as his Sixth Corps attacked west from Fredericksburg toward Salem Church. The Confederates attacked on May 4 and stopped this advance.

The Union Army did not attack the Confederate positions near Chancellorsville when Lee moved forces to the east because the latter's defenses were strong. Hooker said that Lee's positions were "fortified strongly, and planted thickly his artillery . . . so that with reduced numbers he could easily hold his lines."³⁶ Despite realizing that Lee had to move troops from Chancellorsville to Salem Church, Hooker still feared assaulting the entrenchments. Lee left only three divisions to defend against six corps.

In the final analysis, survivability operations decisively impacted the Chancellorsville Campaign. Hooker's operational plan to envelop Lee's flank was a direct result of his experience at Fredericksburg. He did not want to conduct frontal assaults against troops in well-entrenched positions. As far as the first part of the operation, Hooker's thinking produced excellent results. By April 30, Hooker had maneuvered almost four corps behind Lee's linear defenses. However, even when confronted by only Anderson's entrenched division, Hooker stopped. For the duration of the campaign, the main body under Hooker executed very limited offensive moves. Through this, the Commander of the Army of the Potomac conceded the initiative and threw away his overwhelming advantage in numbers.

On the other side, strong survivability positions permitted Lee to shift forces to critical locations throughout the battle. He could not have attempted Jackson's flank march unless his defenses in front of Hooker were formidable. Lee had two divisions to face Hooker's main body while Jackson marched west. He also could not have shifted forces to meet the threat to his rear when Sedgwick broke through at Fredericksburg. Without these defenses, his numerical inferiority would have been readily apparent. The main body of the Army of the Potomac could then have easily overpowered the Confederates.

Endnotes

¹U.S. Department of the Army, Engineer Combat Operations, Field Manual 5-100 (Washington, D.C.: U.S. Government Printing Office, 1988), 10.

²U.S. Department of the Army, Survivability, Field Manual 5-103 (Washington, D.C.: U.S. Government Printing Office, 1985), 1-1.

³Jomini, 141.

⁴Mahan, 2.

⁵Ibid., 3.

⁶Walter H. Hebert, Fighting Joe Hooker (Indianapolis: Bobbs-Merrill, 1944), 159.

⁷Ibid., 159.

⁸Samuel P. Bates, "Hooker's Comments on Chancellorsville," in Battles and Leaders of the Civil War, vol 3 (New York: Thomas Yoseloff, 1956), 215.

⁹Swinton, 270.

¹⁰Ibid., 270.

¹¹Official Records, XXV, Part 1, 195.

¹²Freeman, R. E. Lee, vol. II, 480.

¹³Stackpole, Fredericksburg, 66.

¹⁴Stackpole, Chancellorsville, 92.

¹⁵Official Records, XXV, Part 2, 761.

¹⁶Official Records, XXV, Part 1, 850.

¹⁷Freeman, Lee's Lieutenants, II, 514.

¹⁸Freeman, R. E. Lee, vol. II, 481.

¹⁹Luvaas and Nelson, xiii.

²⁰Bates, 218.

²¹Hebert, 200.

²²Ibid., 200.

²³Oliver O. Howard, "The Eleventh Corps at Chancellorsville", in Battles and Leaders of the Civil War, vol. III (New York: Yoseloff, 1956), 195.

²⁴Ibid., 195.

²⁵Freeman, R. E. Lee, vol. II, 523.

²⁶Ibid., 523.

²⁷Jomini, 167.

²⁸Official Records, XXV, Part 2, 360.

²⁹Official Records, XXV, Part 1, 643.

³⁰Bruce Catton, Glory Road (Garden City, N.Y.: Doubleday, 1952), 218.

³¹Catton, Glory Road, 204.

³²Swinton, 293.

³³Cullen, 30.

³⁴Ibid., 30.

³⁵Hooker, 223.

³⁶Ibid., 222.

CHAPTER FOUR

TOPOGRAPHIC ENGINEERING

The battlefield function of topographic engineering played a notable part in the campaign of Chancellorsville. Present army doctrine states that "topographic engineering provides commanders information about terrain."¹ Engineers "recommend avenues and routes, obstacle locations, engagement areas, unit positions, and deep operations targets."² Engineer reconnaissance is important to this effort. Often, engineers conduct their reconnaissance simultaneously and with the cavalry scouts of a battalion. However, the engineer focus is on the technical aspect of obstacles such as minefield density and the ability of engineer equipment to breach. Units often overlook this facet of reconnaissance. The tasks of terrain analysis and map production also fall under this battlefield function. Since "all engineers are terrain analysts and assist others to use the ground most effectively" they should provide input to the modified combined obstacle overlay that the intelligence officer produces. Finally, too often the Army takes maps for granted today. However, Operation Desert Storm in Southwest Asia and Operation Urgent Fury in Grenada were recent historical examples where the lack of accurate maps impacted operations. These should highlight the importance of precise and available map supply. Each example cited above contributes to the commander's ability to "develop plans that make the best use of terrain."³

During the Chancellorsville Campaign, engineers provided topographic support through ground reconnaissance, aerial reconnaissance, and map production. Often, the information submitted to the maneuver commanders was critical to the operations. At times, the commanders made the correct decisions from the information engineers provided. At other times the commanders failed to exploit the accurate intelligence provided through the reconnaissance of engineer staff officers. On the whole, the Army of Northern Virginia made excellent use of this information while the Army of the Potomac did not. Engineer reconnaissance proved decisive at several critical points in the battle, which resulted in the Confederate victory.

Map production fell under the responsibility of the topographic engineers. In addition to topographic engineers in the field, the Union had a topographic bureau. This bureau had been in existence since 1818.⁴ "Possession of the topographic bureau in Washington, with its files and long-established organization, gave the Federals much the advantage in map supply."⁵ Before the war, the bureau oversaw civil works projects and explorations to the American West. However, at the commencement of hostilities, the topographic bureau concentrated on "printing and distributing maps for use in the field. This was an important mission, and the bureau could never keep up with the demand of field units."⁶ Unlike today, usually only senior commanders were fortunate to have maps. Often maps that officers had were inaccurate or they displayed varying degrees of detail from others. This caused problems in planning and coordinating operations. Despite this, the Union Army had better access to existing maps than the Confederates.

Imitating the Union Army, the Confederates created their own topographic map bureau in Richmond under Captain Albert H. Campbell.⁷ The bureau prepared maps for field operations and to accompany the post-battle official reports. Colonel J. F. Gilmer, the recently appointed Chief of Engineers in the capital, quickly became involved in the procurement of supplies. "Map reproduction on any scale necessitated a variety of special items of drafting and coloring materials." Since many of these items were not available within the blockaded Confederate States of America, the engineers had to look outside the country. Gilmer dispatched Captain John M. Robinson to England to obtain items for map making. Just two weeks before Chancellorsville, Captain James K. Boswell, the Confederate Second Corps Chief Engineer, went to the capital on official business and procured some drafting supplies. On April 15, the corps topographic engineer recorded in his journal that "Boswell came back today - Pencils were a dollar each in Richmond." Shortages of elementary drawing items adversely affected Confederate map production throughout the war.

Although the Army of Northern Virginia did not have a long established topographic bureau, Confederate topographic engineers did produce good maps of the area around Chancellorsville. The Confederates had the obvious advantage of occupying the terrain before the campaign started. One of the best and most famous topographic engineers on either side during the war was Jedediah Hotchkiss. At the time of the Chancellorsville Campaign, he was the Topographic Engineer for "Stonewall" Jackson's Second Corps. Boswell, Jackson's Chief Engineer, was a friend and the supervisor of Hotchkiss. In March of 1863 Boswell endorsed Hotchkiss' application for an engineer officer commission. It said that

Hotchkiss "has rendered a large amount of valuable service. In the collection of Topographical information I have never known his superior."⁸ Hotchkiss' outstanding maps of the Shenandoah Valley gave Jackson intelligence on the terrain. This knowledge contributed to Jackson's ability to outmaneuver Union force, which led to a successful Confederate campaign.

In the relatively uneventful months preceding the Battle of Chancellorsville, Hotchkiss drew numerous maps. The high command began to develop offensive plans that were put into effect after Chancellorsville. On February 23, he "got secret orders from the General to prepare a map of the Valley of Va. extended to Harrisburg, Pa., and then on to Philadelphia".⁹ Early in March he "finished the map of Cumberland Co., Pa., and copied the Counties of Spotsylvania and Caroline for Gen. R. E. Lee".¹⁰ The latter map supported the more immediate operations. Spotsylvania County, Virginia is south of the Rappahannock River and includes Chancellorsville and Fredericksburg. Caroline County is also south of the river to the east of Spotsylvania County. Jackson's Corps occupied positions in this vicinity at the start of the campaign. Other key leaders besides Lee needed his superior maps. Hotchkiss wrote at the end of March that "Boswell and I went in the evening up to see Gen. Stuart, he taking him a map of the country of Fauquier, a copy of my map."¹¹ This county is north of the river to the west of Chancellorsville. The Confederate cavalry frequently patrolled this area. Lee continued to value the services of the Second Corps Topographic Engineer. On April 21, Hotchkiss "worked on some reductions of maps for Gen. Lee (Culpeper, Orange and Madison Cos.) which were brought over by Col. Smith of the Engrs., our

Chief Eng."¹² The Chief Engineer for the Army of Northern Virginia, Lieutenant Colonel William P. Smith, apparently had no one skilled in cartography as Jed Hotchkiss. As the battle commenced on April 30, Jackson ordered Hotchkiss to "strike off eight maps embracing the region between the Rapidanne [sic] and the Rappahannock and . . . and one for himself extending to Stevensburg."¹³ The following day he completed the "maps and supplied the division Commanders."¹⁴ Even on May 2, when Jackson's flank march and attack occurred, Hotchkiss "spent a part of the day at General Lee's headquarters copying map."¹⁵

Brigadier General Gouverneur K. Warren assumed the duties as the Chief of Topographical Engineers for the Army of the Potomac on February 3, 1863.¹⁶ There was not a clear delineation of responsibilities between the Topographic Engineers and the Corps of Engineers. Captain Comstock, the Corps of Engineers staff officer for the army, fortunately had a good relationship with Warren.¹⁷ The two cooperated with each other and made the awkward arrangement function properly. This organization remained in place for only a few months, but it did not change until after the Chancellorsville Campaign. To further complicate matters, the Engineer Brigade and the Regular Engineer Battalion were initially totally separate entities from the staff positions. To alleviate this problem, Congress passed a law on March 3, 1863 that consolidated the Topographic Engineers and the Corps of Engineers as one branch.

In the Civil War, engineer staff officers conducted personal reconnaissance to obtain information for terrain analysis and map production. Engineer officers, due to their terrain expertise, would often reconnoiter enemy positions for the commander. Robert E. Lee, as a captain

of engineers on the staff of General Winfield Scott during the Mexican-American War, conducted many such missions. Lee provided invaluable information that allowed the army to envelop Mexican positions on numerous occasions.

Robert E. Lee's reconnaissance efforts at the battles of Cerro Gordo and Padierna in the Mexican-American War were crucial to these successes for the United States Army. Prior to Cerro Gordo in April of 1847, Scott ordered Lee to conduct a reconnaissance of the Mexican left flank, which was among deep ravines.¹⁸ It was not practicable to assault the Mexican right flank since it was anchored on a river. Lee, along with a guide, scouted the ravines and was able to penetrate to the Mexican rear. They stumbled upon a spring that the enemy used for water resupply. As some Mexican soldiers approached for water, Lee had to hide under a log. He remained there, motionless, for the better part of the day until the activity at the spring finally ceased as night fell. He made his escape in the dark with vital knowledge of the terrain and a route through the Mexican position. Lee acted as a guide to a division of troops that seized key terrain in the Mexican rear. The battle was a resounding victory for the American Army. In his official report, General Scott himself wrote that he was "impelled to make special mention of the services of Captain R. E. Lee, engineers. This officer . . . was again indefatigable during these operations, in reconnaissance as daring as laborious, and of utmost value."¹⁹ As a result of this action, Lee received a brevet to major and improved his reputation in the army.

At Padierna in August of 1847, Lee's reconnaissance again was a significant factor to the American's victory over the Mexicans. The

Mexican Army occupied strong defenses along the road to the town of Padierna. To the right of the American position was a large lava rock field, or Pedegral, that was very difficult to traverse.²⁰ Lee reconnoitered and found a trail through this obstacle that a party of engineers improved for movement. Once again Lee led troops through terrain that the Mexicans believed impenetrable. For the second time the Americans turned the Mexican position. General P. F. Smith, one of the brigade commanders, praised Lee's deeds in his report of the battle. "His reconnaissances, though pushed far beyond the bounds of prudence, were conducted with so much skill, that their fruits were of the utmost value."²¹

Cerro Gordo and Padierna were remarkably similar in concept to Jackson's attack at Chancellorsville. Lee learned firsthand that engineer reconnaissance could provide invaluable information to support a bold maneuver plan. The future Commander of the Army of Northern Virginia also realized that avoiding the strength of enemy defenses and attacking from an unexpected direction through restrictive terrain could produce decisive results.

There were two instances of reconnaissance by engineers that greatly affected the operations at Chancellorsville. In each case, the reconnaissance revealed critical intelligence to the Army commander. In one, however, the commander failed to act properly in light of this information. The other example displayed what can be accomplished when a commander acts properly on timely and accurate information.

The first example by a Union engineer provided superb intelligence on the terrain, but the Army commander failed to use this knowledge.

General Warren, as he was to prove two months later at Gettysburg, was an excellent judge of terrain. He reported that "On the morning of May 1, I went out 3 miles on the turnpike to Fredericksburg to reconnoiter."²²

Warren began his reconnaissance from the Union position at the Chancellorsville crossroads. He discovered that the Turnpike was wide and overall was a good avenue of approach. "The country along the road for the first mile is wooded on both sides, and was generally so to the left of it."²³ He went on to say that "To the right of the road it was rather more open, and in places the clearing extended across from the road to the Plank road."²⁴ In this location, the Plank Road was parallel and to the south of the Turnpike. "I found the Eighth Pennsylvania Cavalry picketing the road for 3 miles and to within sight of the enemy's breastwork thrown across the road, which was as far as I could go."²⁵ Hooker had ordered an attack to the east before Warren returned.

The Topographic Engineer accompanied Major General George Sykes for the advance. The Turnpike, which was the route Warren had scouted, was the avenue of approach for Sykes' Second Division of the Fifth Corps. Before the predetermined time for the general Union advance, the Confederates seized the initiative and attacked first. The Union attack did begin, but met stiffer resistance along the Orange Turnpike and the Orange Plank Road than expected. However, the other two divisions of Meade's Fifth Corps met no enemy along the River Road to the north. Despite this, the Commander of the Army of the Potomac changed his mind. "From information received since the advance began, the general decided to countermand it, and receive the enemy in the line occupied the night before."²⁶ General Warren, the terrain expert, realized this was a poor decision by Hooker. "It was a bad

line, and had several commanding positions in its front for the enemy to occupy."²⁷

According to Warren, Hooker and his staff developed courses of action. "Two general plans of operations were now considered. One was to choose a position and intrench; the other, to choose our point of attack, and advance with our whole force."²⁸ Warren was more aggressive than Hooker. "I was in favor of advancing, and urged it with more zeal than convincing argument."²⁹

As the Chief Topographic Engineer for the Army of the Potomac, Warren knew the effects of the terrain. He believed that they could use the Turnpike and the Plank Road to keep pressure on the Confederates. A few miles from Chancellorsville, these roads were within supporting distance due to the clearings. Warren also wanted to attack with a strong force along the River Road since Meade had met no resistance there. "The advantage of the initiative in a wooded country like this, obscuring all movements, was incalculable."³⁰ Additionally, this was the shortest route to Banks' Ford. Warren knew from maps and from personal reconnaissance that the terrain was relatively unrestricted to the east of Chancellorsville as compared to the Wilderness. He urged Hooker to continue the advance to ground where the army could maneuver and take advantage of its numerical superiority. However, Hooker did not heed Warren's advice and instead assumed a defensive posture around Chancellorsville. Hooker's action was in keeping with his original intent in an order dated April 28. The order directed Major General Slocum, the Twelfth Corps Commander, that "If the enemy should be greatly re-enforced, you will then select a strong position, and compel him to attack you on

your own ground."³¹ The Commander of the Army of the Potomac believed that the Confederates were in considerable strength, while in actuality only Anderson's Division was entrenched to the front. This was a crucial mistake for the Army of the Potomac. Many Union units never saw action during the battle and were fresh because they remained in defensive positions that the Confederates never attacked. Hooker never used the full weight of the force he had available. By conceding the initiative, he allowed the Confederates to first find, and then to attack the weak spot in the defenses. This attack by Jackson is the other example of engineer reconnaissance.

Confederate engineers deserve some of the credit for Major General Thomas J. Jackson's brilliant flank march and enveloping attack on May 2. Lee, looking for a way to regain the initiative, wanted to attack Hooker's line. Probably recalling his adventures as a young engineer at Cerro Gordo and Padierna, he personally reconnoitered the Union left. However, he found that Meade's Fifth Corps securely tied their left flank into the natural obstacle of the Rappahannock River. General Fitzhugh Lee, one of J. E. B. Stuart's cavalry division commanders, reported on May 1 that the Federal right was in the air. The defensive line ended in the vicinity of the Orange Turnpike to the west of the Wilderness Church. There were insufficient troops to defend all the way back to the Rapidan River. Howard's Eleventh Corps occupied this sector. Howard refused the far right of his line, meaning he altered the orientation of some of the units from facing to the south to facing to the west. He decided to "strengthen it with breastwork and abatis."³² Since the fighting initially was to the east of Chancellorsville, the Eleventh Corps did not believe that the

Confederates would attack from the west along the Orange Plank Road. Engineers would help to confirm that the Union right flank was the proper place to attack.

Reconnaissance by engineers affirmed that there were no other serious weak points in the Union defenses and found a suitable route for Jackson's Corps to take to envelop the Union line. Two engineers, Major T. M. R. Talcott of Lee's staff and Jackson's Chief Engineer, Captain James K. Boswell, reconnoitered Hooker's front. They reported that the defenses were strong and recommended against a frontal attack. This convinced Lee to attempt a flanking maneuver.³³ Jackson sent Jed Hotchkiss, his Topographical Engineer, to gather information on a concealed route to the Union flank.

Hotchkiss consulted with Stuart and a local resident and conducted a limited personal reconnaissance in the early hours of May 2. He then sketched the information on his map. Hotchkiss "ascertained the roads that led around to the enemy's rear and came back and reported to Generals Lee and Jackson, who consulted and examined the map."³⁴ Lee ordered Jackson to attack with his entire corps. The movement began early on the morning of May 2. However, it was not until around 5 P.M. that the forces were in position to begin the attack. The circuitous route and the difficult deployment in the woods to the west of the Union lines contributed to delay the attack. However, the attack caught Howard's Corps by surprise on the whole and improperly deployed to defend to the west. The Confederate Second Corps routed the Union Eleventh Corps. Darkness, the obstacle of the Wilderness, and effective resistance by some Union units finally halted the Confederate onslaught.

As darkness fell and the attack began to culminate, Jackson decided to continue the assault. He wanted to exploit his success by finding a route to the Union rear. He told Major General A. P. Hill to "Press them; cut them off from the United States Ford, Hill; press them."³⁵ Although the Confederates were still a few miles away from the ford, possession of it would have been disastrous for Hooker's army. The Union Army's lines of communication ran through U.S. Ford. However, Hill and his division staff did not have personal knowledge of the ground and the routes to the ford. Significantly, the corps commander decided to provide assistance to his subordinate through terrain expertise. "Jackson turned to Captain Boswell, his chief engineer officer, who was well acquainted with all the roads and paths, and ordered him to report to Hill."³⁶ Hill began to form his division at the front of the corps for the attack. The division commander and his staff, along with Boswell, then began to reconnoiter toward the Union lines.

Jackson, not satisfied to sit idle while Hill made preparations for the attack, took his corps staff on his own personal reconnaissance forward of the Confederate lines. The Second Corps staff got to within a few yards of the Union troops when they heard them using axes to fell trees for abatis and logwork survivability positions. Jackson was satisfied with his reconnaissance. "That was what he had come out here for. The Federals were close by and fortifying their position."³⁷ Jackson turned his staff around to return to his own lines. As the mounted men neared the friendly positions, Confederate infantrymen thought they were Federal cavalrymen and fired on them. In this most famous Civil War incident of fratricide, Jackson received serious wounds and later died of complications. The

Confederacy was never able to replace Lee's most trusted and competent lieutenant. Jackson died due to his desire, as the commander, to be at the decisive place and time. At that moment, Jackson needed intelligence on the terrain and Union positions that he felt he could only get from a personal reconnaissance.

Meanwhile, Hill along with his staff was also in front of his division in the immediate vicinity of the corps staff. In the same accidental volley that hit Jackson, the Chief Engineer of the Second Corps was also struck. Captain Boswell died immediately with two bullets to the heart. The shots also pierced his notebook containing sketches of key terrain, including the fords across the Rappahannock.³⁸ Boswell had made the sketches during reconnaissances prior to the commencement of the campaign. These scouting missions in the first few months of 1863 gave the engineer first-hand knowledge of the topography and features such as the roads.

Although the wounding of Jackson was more significant, the death of Boswell also contributed in halting the Confederate night attack. In the Federal artillery bombardment that immediately followed the fratricide incident, A. P. Hill was also wounded. "Hill's wound, while slight, proved sufficiently disabling to require his removal for treatment."³⁹ Hill had just assumed command of the Confederate Second Corps shortly before. Hill transferred command temporarily to Brigadier General Robert E. Rodes, another of Jackson's division commanders. At the same time, Hill sent for J. E. B. Stuart of the cavalry so a major general could take charge of the leadership-depleted corps. Before Stuart could arrive, however, Rodes had to make the dispositions.

Stonewall Jackson's intent to conduct a turning movement of the Union position and seize the United States Ford "was not known to Rodes or his advisers. Moreover, Captain Boswell, the officer assigned to Hill to guide him to the rear of Chancellorsville, was killed or mortally wounded by the fire which wounded Jackson."⁴⁰ The quick and unexpected changes in the succession of command contributed to stopping the attack that night. Rodes "called a halt in the attack, countermanding Jackson's earlier order to Hill's Division (presently commanded by Harry Heth) to push on to United States Mine Ford."⁴¹

Casualties among the senior Confederate leadership and Jackson's failure to ensure his subordinates understood his intent also altered the direction of the attack. "Rodes made his disposition with a view to throwing his force directly upon Chancellorsville."⁴² At this point in the battle, Jackson wanted to avoid the reformed Union lines near Chancellorsville. He believed that a turning movement onto the Union line of communication at United States Ford would provide more decisive results. Jackson told Doctor Hunter McGuire, the Confederate Second Corps Medical Director, after the battle "that he had intended, after breaking into Hooker's rear, to take and fortify a suitable position, cutting him off from the river and so hold him until, between himself and General Lee"⁴³ they could destroy the Union Army. In this discussion on his deathbed, Jackson also declared "We sometimes fail to drive them from position, they always fail to drive us."⁴⁴ He understood the advantages of defending with strong survivability positions. The corps commander desired to seize United States Ford, establish defenses there, and prevent the Army of the Potomac from withdrawing across the Rappahannock River.

With the chain of command broken through casualties, the loss of Boswell the Chief Engineer was another serious misfortune. Boswell knew Jackson's desire to drive toward the ford and, with his knowledge of the terrain, had a general idea of the routes to get there. As J. E. B. Stuart arrived on the scene, he also decided to suspend the attack until the morning of May 3. One reason for this decision was that "the officer who was to have guided the column in this movement was killed or mortally wounded."⁴⁵ The death of Boswell meant that no one at the front of the Second Corps understood the true purpose of the mission or where it should be headed.

In the Army of the Potomac, the Balloon Corps conducted outstanding reconnaissance through aerial observation, but the Army Commander did not use the data properly. During the Chancellorsville Campaign, Captain Comstock of the Engineers supervised this reconnaissance capability. Professor Thaddeus S. C. Lowe possessed a commission from the government and headed the Balloon Corps. Unfortunately, the extremely poor relationship between Lowe and Comstock led to the organization's demise. The Army disbanded the Balloon Corps shortly after Chancellorsville in part because of this situation despite the valuable information the aerial platforms provided.

The Federals transferred Lowe's Balloon Corps from the Quartermaster Department to the Engineers shortly before the Chancellorsville Campaign. The Army of the Potomac Headquarters issued a special order dated April 7, 1863 that read, "Capt. C. B. Comstock, Corps of Engineers, is assigned to the immediate charge of the balloon establishment."⁴⁶ Since the observation from the balloons aided in

sketching terrain for maps and other reconnaissance that engineers normally conducted, the change appeared logical. The Quartermaster Department had the expertise to account for the equipment, but not to operationally employ the assets. Also, early in the war, the balloons fell under the responsibility of the Topographic Bureau. The new arrangement was an attempt to improve efficiency of the reporting system.

The organizational change had the added benefit of making Lowe more accountable for his actions. Within a few days of the special order, it is clear from the official correspondence that Lowe would come under closer scrutiny than previously. In response to a query by Lowe for guidance on his duties, Comstock replied on April 12 that "In camp, when the wind is still, ascensions should be made at morning, noon, and night . . . and reports made to me in writing of all that is observed during the day."⁴⁷ The engineer also detailed specific directives such as Lowe should make many of the flights himself since he had the most expertise. Comstock directed that the civilian employees would not receive pay if they were absent. Lowe, the most experienced and famous aeronaut of the day, did not appreciate these new precise rules. Up until this time with the Army of the Potomac, Lowe had relatively free reign to operate as he saw fit. However, Lowe's most serious grievance with his new supervisor was over his pay. Comstock reduced Lowe's daily wages from \$10 to \$6. Lowe took affront at this amount, claiming that the government originally offered him \$30 a day when the war started and that he offered his services for \$10. In a letter to General Butterfield, the Army Chief of Staff, Lowe said that he could not "honorably serve for the sum named by Captain Comstock without first refunding to the Government the excess of that amount."⁴⁸ He

believed that the Army of the Potomac did not appreciate his contributions over the last two years. Despite these disagreements over the administration of the Balloon Corps, the Army lost an invaluable reconnaissance asset.

Captain Comstock standardized the reporting procedures to identify Confederate encampments and movements. Lowe numbered and reported each camp location to Comstock on April 17. This brevity code made reporting easier when the balloons were aloft and avoided discrepancies. On April 22, Lowe estimated the "relative strength of the enemy, I should say that they are about three to our four. I should estimate their supports to the batteries immediately back of the city of Fredericksburg to be about 10,000."⁴⁹

Lowe's balloons made observations primarily in the vicinity of Fredericksburg to report Confederate strength opposite Sedgwick's attack. One report on April 29 said that "The enemy are moving wagon trains to their rear."⁵⁰ Major General Butterfield, Hooker's Chief of Staff, ordered one balloon to Banks' Ford on April 29 to observe movements between Fredericksburg and Chancellorsville. Lowe went to supervise this operation, so he wrote to Sedgwick "I think it advisable that some engineer or other competent officer be instructed to ascend in balloon Washington from time to time until my return, for the purpose of reconnoitering from Fredericksburg."⁵¹ Lowe returned to his balloon opposite the town and at 8:30 P.M. on April 30, reported that "From appearances I should judge that full three-fourths of the enemy's force is immediately back and below Fredericksburg."⁵² Lowe correctly discerned that Lee had not yet moved out of his defenses to meet Hooker at Chancellorsville.

On May 1, Lowe again submitted accurate reports on the Confederate movements. However, Hooker failed to attack from Chancellorsville to the east early that morning despite the excellent intelligence on the Confederate dispositions. "Lee's intentions, as distinct from his actions, were apparently beyond Hooker's capacity to fathom, for the latter was still vacillating on the morning of May 1."⁵³ The Confederates used this time wisely to react to Hooker's concentration. Intelligence from Signal Corps stations at 9 A.M. that the enemy began to move to the west from Fredericksburg contributed to "Hooker's indecision, for he delayed ordering the advance until about 11 o'clock, by which time more precious hours had been wasted and Jackson given time to unite his corps."⁵⁴ As discussed previously, Hooker halted the attack, according to General Warren, due to "information received since the advance began."⁵⁵ This information that caused Hooker to change his mind came from the Balloon Corps.⁵⁶ "The largest column of the enemy is moving on the road toward Chancellorsville"⁵⁷ stated an 11 A.M. report by Lowe. This decision was a critical mistake by Hooker. Until that point, the Union Army met limited resistance on one avenue of approach. The force moving along the River Road was almost within sight of Banks' Ford. The possession of this key terrain would have shortened the distance between Hooker's two wings and tightened the encirclement on Lee. The Army of the Potomac Commander did not properly use the accurate intelligence from his collection sources. "Thanks to his 'balloons in the air', he knew early in the afternoon of 1 May that Lee was moving out from Fredericksburg to attack . . . But instead of utilizing this information, Hooker seemed overwhelmed by it."⁵⁸

Although the Army of the Potomac possessed greater topographical engineering capability, the Army of Northern Virginia integrated these capabilities better into their operational plans. The ability of the Confederates to employ these assets and to interpret the information accurately were key to their planning and execution of the maneuver plan. A significant cause for the Federals' defeat was their inability to accept and use accurate intelligence in a timely manner.

Endnotes

¹FM 5-100, 10.

²Ibid., 10.

³Ibid., 10.

⁴Frank N. Schubert, The Nation Builders (Fort Belvoir, VA: United States Army Corps of Engineers Office of History, 1988), 6.

⁵James L. Nichols, "Confederate Map Supply", in The Military Engineer, Vol. XLVI, No. 309, January-February 1954, 31.

⁶Schubert, 75.

⁷Nichols, "Confederate Map Supply", 31.

⁸Jedidiah Hotchkiss, Make Me a Map of the Valley (Dallas: Southern Methodist University Press, 1973), 120.

⁹Ibid., 116.

¹⁰Ibid., 119.

¹¹Ibid., 124.

¹²Ibid., 134.

¹³Ibid., 136.

¹⁴Ibid., 137.

¹⁵Ibid., 139.

¹⁶Emerson Gifford Taylor, Gouverneur Kemble Warren (Boston and New York: Houghton Mifflin, 1932), 104.

¹⁷Ibid., 105.

¹⁸Freeman, R. E. Lee, vol. I, 238.

¹⁹Ibid., 247.

²⁰Ibid., 255.

²¹Ibid., 271.

²²Official Records, XXV, Part 1, 198.

²³Ibid., 198.

- ²⁴Ibid., 198.
- ²⁵Ibid., 198.
- ²⁶Ibid., 199.
- ²⁷Ibid., 199.
- ²⁸Ibid., 199.
- ²⁹Ibid., 199.
- ³⁰Ibid., 199.
- ³¹Official Records, XXV, Part 2, 274.
- ³²Ibid., 199.
- ³³Douglas S. Freeman, R. E. Lee vol. II, 520.
- ³⁴Hotchkiss, 137.
- ³⁵G. F. R. Henderson, Stonewall Jackson (New York: Konecky and Konecky, 1993), 449.
- ³⁶Bigelow, 316.
- ³⁷Stackpole, Chancellorsville, 258.
- ³⁸William K. Goolrick, Rebels Resurgent (Alexandria, VA: Time-Life, 1988), 119.
- ³⁹Stackpole, Chancellorsville, 262.
- ⁴⁰Bigelow, 323.
- ⁴¹Stackpole, Chancellorsville, 266.
- ⁴²Bigelow, 323.
- ⁴³Ibid., 340.
- ⁴⁴Ibid., 341.
- ⁴⁵Ibid., 340.
- ⁴⁶Official Records, III, Part 3, 302.
- ⁴⁷Ibid., 303.
- ⁴⁸Ibid., 304.

⁴⁹Ibid., 309.

⁵⁰Ibid., 310.

⁵¹Ibid., 311.

⁵²Ibid., 312.

⁵³Stackpole, Chancellorsville, 175.

⁵⁴Ibid., 175.

⁵⁵Official Records, XXV, Part 1, 199.

⁵⁶Luvaas and Nelson, 311.

⁵⁷Ibid., 313.

⁵⁸Ibid., 314.

CHAPTER FIVE

CONCLUSION

Mobility, countermobility, survivability, and topographic engineering affected operations considerably during the Campaign of Chancellorsville. Despite the wealth of information written on the campaign and the battle, few secondary sources discuss the impact of these engineer battlefield functions. On the contrary, many historians overlook the reasons behind the decision-making processes of the commanders. In many instances, the decisions are attributable to the engineer-related functions.

The Battle of Chancellorsville is usually considered, with a great deal of validity, a masterpiece of tactical maneuver on the part of Robert E. Lee. His Army of Northern Virginia, with only 60,000 troops, secured a decisive victory over "Fighting Joe" Hooker's Army of the Potomac with 130,000 men. However, it is the contention of this thesis that the functions of countermobility and, most importantly, survivability that necessitated the maneuvers that Lee and Jackson undertook. Conversely, the functions of mobility and topographic engineering supported their maneuver. Simultaneously, Hooker and the Union Army made excellent use of the bridging capability of the Engineer Brigade to provide mobility to the force. This mobility allowed Hooker to position his army to confront the Confederates and it preserved the force by enabling the retrograde

operations following the battle. Unfortunately for the Federals, this was the only engineer battlefield function that they employed correctly. Hooker relied too heavily on survivability and countermobility to destroy the Confederates at the expense of conceding the initiative. This was an inappropriate course of action considering the overwhelming numerical advantage the Union possessed. Although Hooker received superior information through his topographic engineering assets, he failed to deduce the correct responses to this information. He made poor decisions because he did not take the intelligence from these sources into proper consideration.

The most significant impact of the engineer battlefield function of mobility was the Army of the Potomac's operational maneuver advantage over the Army of Northern Virginia. The Engineer Brigade laid a total of 14 pontoon bridges, at times under fire from Confederate sharpshooters. These bridges allowed Hooker initially to surprise and outflank Lee's prepared defenses in and around Fredericksburg. Without the bridging assets, the Union Army could not have forced the battle in this area.

Uppermost in Hooker's mind was to fight the Confederates on his own terms, with terrain of his choosing, and to avoid an opposed river crossing operation followed by frontal attacks against an entrenched force. He believed, rightfully so, that General Ambrose Burnside made a serious mistake by attacking at Fredericksburg. By the time the Union Army crossed the Rappahannock River in December of 1862, Lee concentrated sufficient forces to block their advance relatively easily. To compound the problem facing Hooker in the spring of 1863, Lee the "King of Spades" strongly entrenched his army in and around Fredericksburg south of the river.

To accomplish his objectives, Hooker decided to fix Lee's main body near Fredericksburg through a feint and to take his own main body around the flank of the Confederate defenses. By sending his main attack far upriver from Fredericksburg, the Commander of the Army of the Potomac wanted to prevent the mistakes Burnside committed. The pontoon bridges and the bridge building expertise of the Engineer Brigade allowed Hooker to envelop Lee's formidable defenses and to conduct the feint at Fredericksburg. There were problems in crossing the Rappahannock near Fredericksburg, but the delay incurred did not have a significant effect on the operations.

Other mobility missions such as counterobstacle operations and combat trail construction had limited effects on the battle. These did not have nearly the influence that bridging operations had. However, the opposing sides did conduct each of these missions.

There were few instances of counterobstacle operations such as reducing or clearing man-made tactical obstacles. Survivability positions were usually behind abatis, creating very formidable defenses. When confronted with such obstacles, the Union Army usually did not attack and instead remained within their own defenses, which included abatis. Hooker's main body generally stayed in a defensive posture around Chancellorsville after the limited attacks on May 1. They rarely attempted to breach through abatis that the Confederates established. The Confederate Army also usually did not breach obstacles that were covered by fire. Being more offensive oriented, however, they attempted to bypass obstacles. This occurred when the reconnaissance by the engineers Major Talcott and Captain Boswell revealed well-prepared defenses with abatis in

the center of the Union line on the night of May 1. This induced Lee to dispatch Jackson on the successful flank march.

Countermobility was important primarily from the standpoint of natural obstacles, and to a lesser degree from man-made obstacles. The most significant existing natural obstacle was the wooded area of the Wilderness. The Wilderness was more of an obstacle to Hooker while Lee took advantage of its concealment. The Union Army remained at Chancellorsville in the middle of the forest and did not advance out into the open terrain to the east. This terrain would have permitted Hooker to use his greater strength in numbers to his advantage. Instead, the Federals were bogged down in severely restricted terrain. The concealment the woods afforded was a key factor in maintaining the secrecy of Jackson's flank march from the Union Army. This attack would not have produced surprise in more open terrain. General Warren realized this same fact when he recommended to Hooker that the Army of the Potomac conduct its main attack along the River Road on May 1. There were limited good roads through the Wilderness. Because the forest floor was covered with a dense undergrowth, the main avenues of approach were generally limited to the roads. Since the tactics of the day involved infantry deployed in tightly packed lines, the woods caused significant problems to controlling maneuver. This delayed the deployment of the Confederate Second Corps prior to its assault on the Union right flank on May 2. This resulted in a postponement of the attack to late in the day. Darkness assisted the Union Army by contributing to halt Jackson's troops.

The Rappahannock and Rapidan Rivers were the other significant existing natural obstacles to mobility. They were wide and unusually deep

due to the spring rains. The fords were not passable to soldiers on foot. As previously mentioned, the pontoon bridging assets of the Union Engineer Brigade allowed Hooker to traverse these waterways. The rivers were greater barriers to the Confederates because of their lack of bridging equipment.

Abatis deterred frontal attacks by both sides. The heavily forested terrain supplied ample raw materials to construct these effective obstacles. Additionally, the abatis were more effective because the limited number of roads were easily blocked. One reason the flank of the Eleventh Corps collapsed was there were insufficient abatis sited to the west. More man-made obstacles in this vicinity would have slowed Jackson's enveloping attack. Despite this, obstacles alone would not have stopped the rout of the Union Army. Adequate defending forces in well-prepared survivability positions, however, would have made a substantial difference.

Both the Union and the Confederate Armies used survivability positions extensively despite the perception that Chancellorsville was primarily a battle of maneuver. Each of the armies employed entrenchments for different reasons. On April 30 and May 1, Hooker's phobia of attacking entrenched positions as a result of his personal experience during the slaughter at Fredericksburg, coupled with his desire to entrench his own army to force Lee to attack, stopped his momentum and negated his superiority in numbers. Conversely, Lee used survivability positions as a combat multiplier for units performing an economy of force that, in turn, permitted him to mass combat power at key locations. He split his forces often with successful results. Survivability at Chancellorsville encouraged Lee's audacity while it totally thwarted Hooker's.

Topographic engineering assets provided invaluable information about the terrain and the enemy dispositions, but Lee made better use of this information than Hooker. The availability of maps of the region was limited to senior commanders. The Union Army had the advantage with a well-established Topographic Engineer Bureau, but the Confederate Army knew the terrain better. Reconnaissance by Topographic Engineer and Corps of Engineer officers on both sides was outstanding. This intelligence was reliable enough for the commanders to base their maneuver plans on.

Hooker had accurate intelligence from General Warren on the terrain between Chancellorsville and Fredericksburg. Warren correctly advised his commander to advance out of the heavily forested and tangled undergrowth of the Wilderness. The Chief Topographic Engineer for the Army of the Potomac also saw the possibilities of using the concealment of the woods to screen the movement he proposed along the River Road. However, Hooker failed to maneuver out of the Wilderness early in the battle. This negated the Army of the Potomac's advantage in numbers and conceded the initiative to the Confederates. Hooker's initial moves up until May 1 were very successful. He concentrated three corps at Chancellorsville and outflanked Lee's well-prepared fortifications around Fredericksburg. Although Hooker wanted to fight a defensive battle, the restrictive terrain of the Wilderness was not the ideal location. He should have listened to Warren's counsel and maintained the initiative to occupy open terrain to the east. Hooker also needed to secure the approaches to the key terrain of Banks' Ford in order to shorten his lines of communication.

The development of aerial reconnaissance by balloons was a tremendous advantage to the Union Army. The vantage point provided by this

platform enabled the Union engineers to gather superior information on the terrain, enemy positions, and enemy movements. However, as with the ground reconnaissance by his engineers, Hooker did not use the information properly. On May 1, Hooker had advance warning from the balloons that Lee was moving out of Fredericksburg toward Chancellorsville. However, instead of using this timely and accurate intelligence to maneuver against the Confederates, the Union commander negated his intelligence advantage and assumed the defensive back in the Wilderness. This allowed Lee to assume the initiative and attack at a place of his choosing. Once again, Hooker failed to apply the information his topographic engineer assets gave him.

On the other hand, Lee effectively used the information from engineer reconnaissance. As an engineer himself, Lee understood the value of this intelligence. In the Mexican-American War, he saw the commander of the army execute successful plans based on the information from engineers. At Chancellorsville, Lee's use of intelligence from engineers and other sources contributed to one of the most successful flank attacks in history. Engineers confirmed that the Union Army had strong defenses in the center of its line and Lee himself ascertained that the Union left was securely tied into the Rappahannock River. After the cavalry discovered that the Union right was not tied into any significant obstacle, engineers identified a route to get Jackson's Corps in position to attack.

Many lessons from the Chancellorsville Campaign pertaining to the engineer battlefield functions are relevant to current and future military operations. A capable river crossing capability is important to allow a force to maintain a mobility advantage over an opposing force. The Army of the Potomac's river crossing assets allowed it to gain an initial advantage

over the Army of Northern Virginia. However, there were coordination problems during the river crossing operation at Fredericksburg. The lesson learned is that commanders must plan river crossings in detail with clear delineation of responsibilities.

Counter mobility through man-made obstacles is more significant today because of increased weapons ranges to cover those obstacles and because of explosive mines that can destroy vehicles and personnel. Additionally, forces must properly site obstacles on all possible avenues of approach, which Howard failed to do on his right flank. A commander cannot disregard an avenue of approach because the enemy is unlikely to attack from that direction. He must consider all possible enemy courses of action and use all available engineering assets to reduce the risks. Survivability continues to be an important engineering contribution to the modern battlefield. Lee employed entrenchments to ultimately assist the maneuver of his army. The United States Army of the 1990's should make extensive use of survivability positions without succumbing to an immovable, defensive mindset. Too often today we neglect the importance of topographic engineering on operations. We take for granted that we will have good maps, however, we may operate in regions where we may not expect to deploy, especially in operations other than war. We may go to an area where we do not have adequate maps, such as Grenada, or to places where maps are not useful, such as the desert of Iraq. Also, modern commanders must use engineer reconnaissance and act on it. Engineer and maneuver commanders today must learn from Hooker and Lee by using mobility, counter mobility, survivability, and topographic engineering to foster initiative.

A recommended future study that will build upon the findings of this thesis is an examination of the intelligence battlefield operating system at Chancellorsville. There were many successes and failures of reconnaissance in the campaign. Engineers provided some of the intelligence, but cavalry also played a significant role in intelligence collection. That topic was not within the scope of this thesis, however, the most notable success of cavalry reconnaissance was Fitzhugh Lee's discovery of Howard's open flank. An important failure was Hooker's order to his cavalry to conduct a raid behind Confederate lines, which left him with insufficient security and reconnaissance assets with the main body. Union cavalry to the front and on the flanks would have discovered Jackson's enveloping attack early enough for the Union Army to react. Also under this topic is the use of intelligence by the commanders on either side. Lee employed intelligence well while Hooker did not. This contributed to Lee's victory and Hooker's defeat. An analysis of the commanders' trust in their intelligence would reveal lessons for current operations. Through the research for this paper, it is clear that the gathering and interpretation of intelligence was significant to the outcome of the battle.

In summation, the commanders of the Army of the Potomac and the Army of Northern Virginia used the advantages and disadvantages of mobility, countermobility, survivability, and topographic engineering differently. They applied many lessons learned from the Battle of Fredericksburg. Hooker's memory as a witness to the carnage below Marye's Heights caused him to be overly cautious at Chancellorsville. He stopped and dug in when he should have pressed the attack. Hooker said "I had been

fully convinced of the futility of attacking fortified positions, and I was determined not to sacrifice my men needlessly. We had already had enough grievous experience in that line."¹ This reason, and not a sudden, unexplained loss of nerve, caused "Fighting Joe" Hooker to lose at Chancellorsville.

Endnote

¹Samuel P. Bates, "Hooker's Comments on Chancellorsville," in Battles and Leaders of the Civil War (New York: Yoseloff, 1956), III, 222.

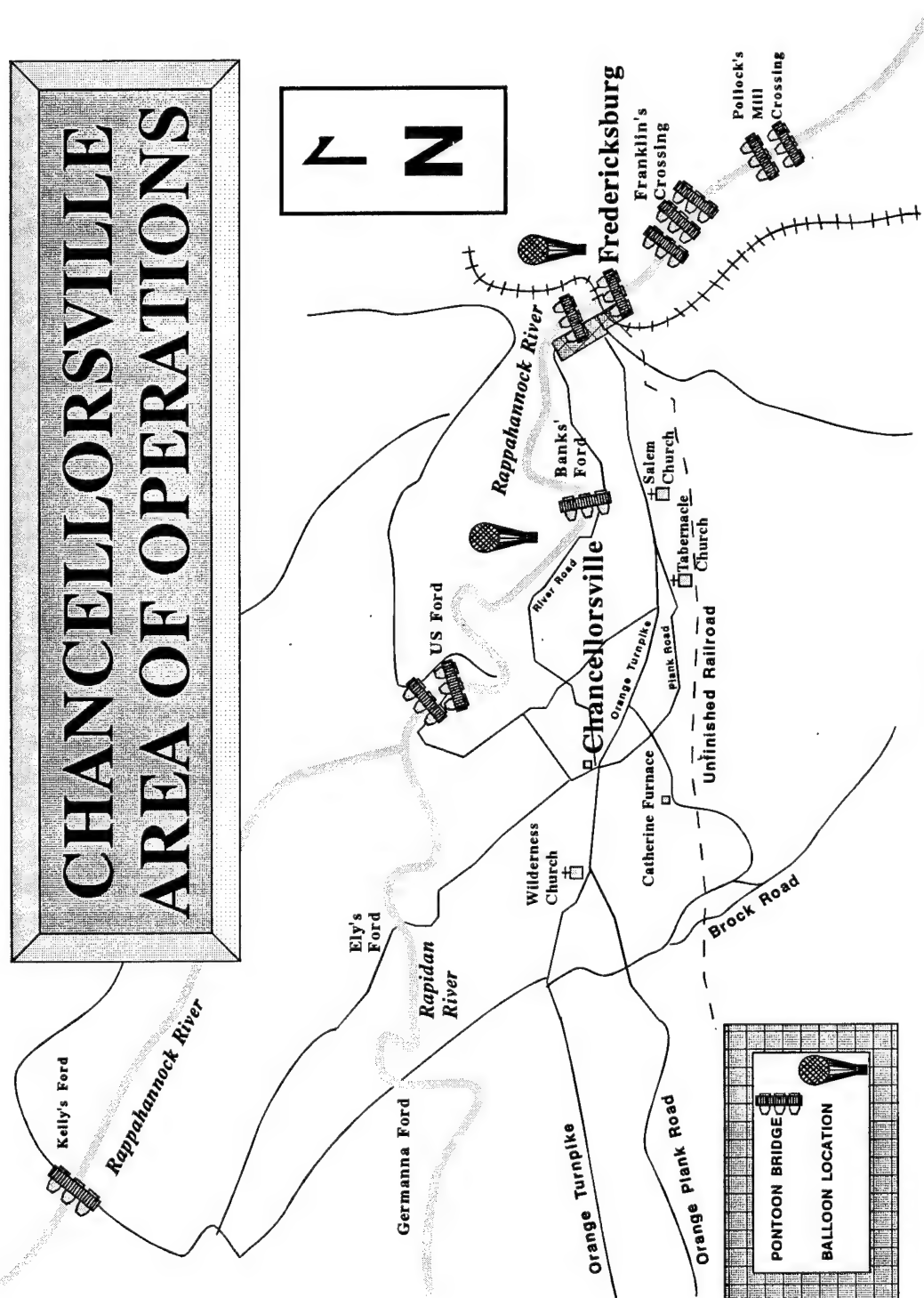


Figure 1

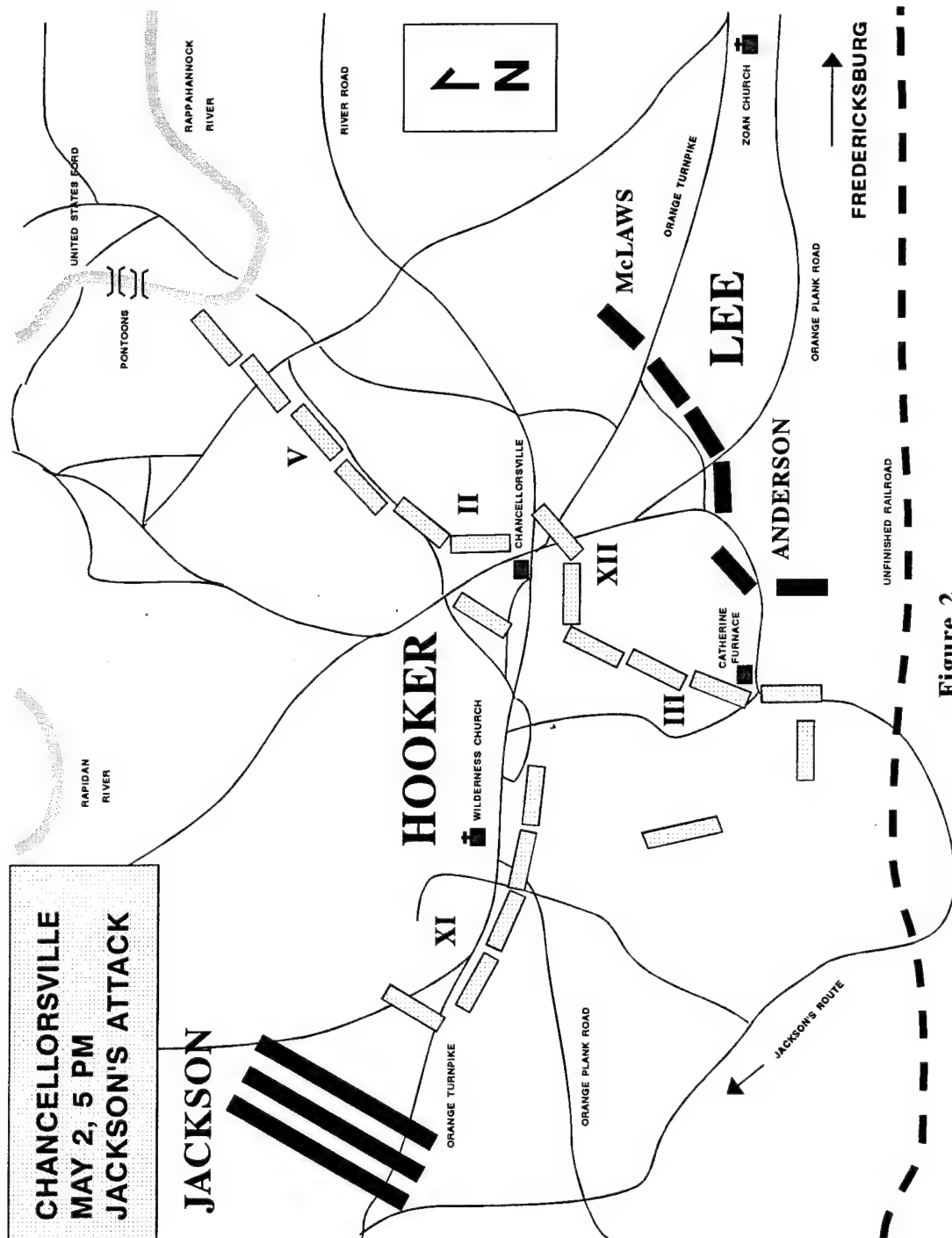


Figure 2

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